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Material Handling Plant in a Scrap Yard

Unusual Equipment Including Car-Loading
Conveyor and Large Shear in Cincinnati
Plant of Joseph Joseph & Brothers Company

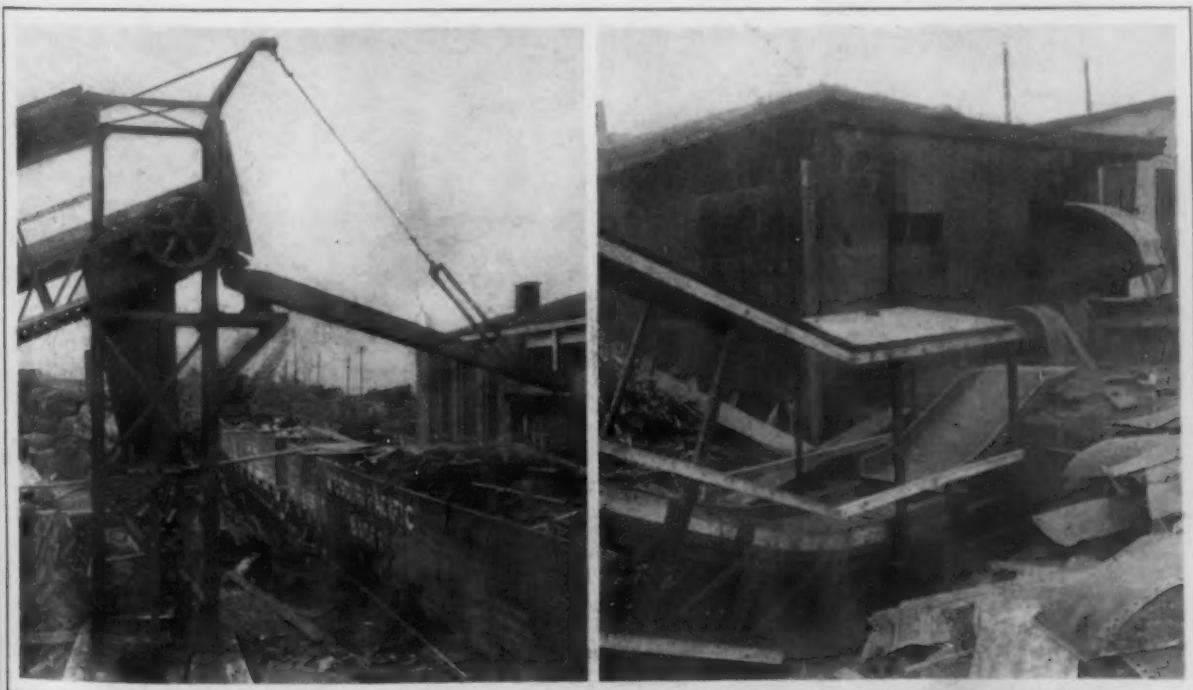
An unusual example of the successful application of conveying apparatus is had in an installation recently completed for the Cincinnati old material yard of the Joseph Joseph & Brothers Company. The plant is designed for handling cut scrap from a shearing machine, carrying the scrap after being reduced to satisfactory size to railroad cars on the opposite side of the yard. Beside the conveying system, which was built and applied by the Alvey-Ferguson Company, Cincinnati, the shear is interesting from its large size. In fact it is of a type seen in steel mills and that a machine of its heavy proportions and large cutting capacity should be needed in a scrap yard shows the caliber of equipment that is now becoming a necessity in the old metal business.

A drawing had been prepared to show the general features of the installation and the three reproductions from photographs here shown will serve to illustrate some of the points of the apparatus. While the actual scheme is simple, the work is unusual in point of the material handled and is thought to be the first of its general kind provided for a metal scrap yard. One of the pictures shows the nearby view of the building containing the shear and the foot of the conveyor. The material cut up into pieces or into usable lengths is readily loaded on the conveyor by being thrown or placed on the apron chute and the material is then carried toward the railroad track and to a point sufficiently high so that it may be discharged

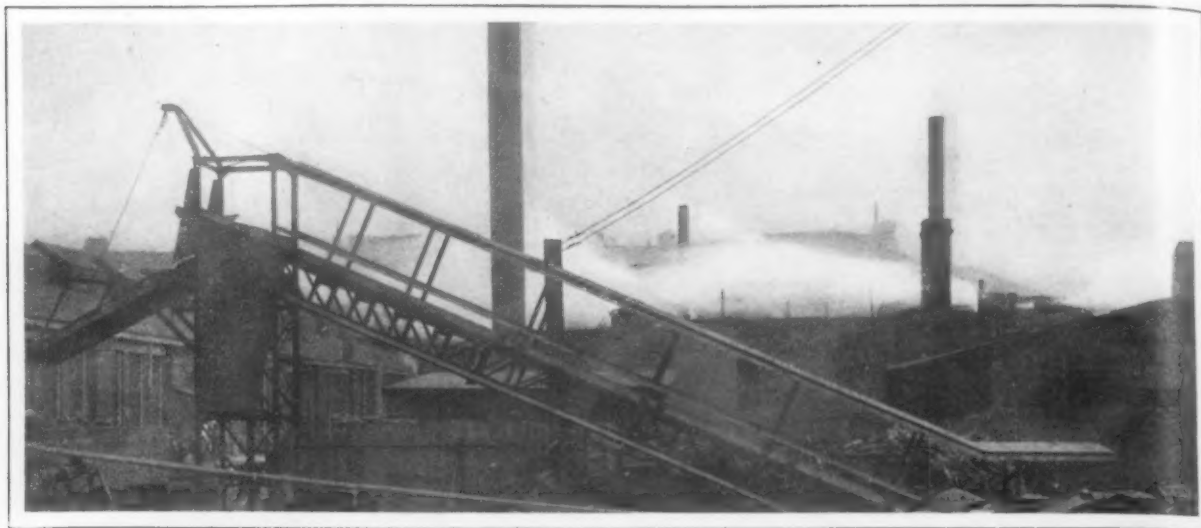
by gravity through the loading chute, this having an overhang over the railroad car.

The conveyor is of the A-F steel apron construction, and the parts are placed at intervals calculated to hold the material on the conveyor, without allowing it to fall through. At its upper end the material is discharged to the swiveled delivery spout, so that it can be distributed over some area in a car without moving the car, or it can for the time being be discharged alongside of the track, according to the position of the spout. It is interesting to note that the height of the conveyor has been made such that the bottom end of the spout may have ample clearance in swinging over the hopper or gondola cars employed and its inclination or pitch is about 8 ft. 3 in. in 13 ft. The system has operated to the saving of a large amount of time and labor in handling the scrap material between the points indicated. In short, the cars are loaded automatically without additional labor after the scrap is once shoveled on the conveyor.

The supporting structure for the elevating portion of the conveyor is of steel, resting on concrete base columns and the whole conveyor is covered with a roof and sides of corrugated iron to protect it from the weather. The drawing will serve to indicate the general proportions of the plant and also the location and method of driving the conveyor by means of an electric motor. The photograph of the general conveyor, showing at the right a portion of



Automatic Loading of Cut Scrap Metal on Cars at Yards of Joseph Joseph & Brothers Company, Cincinnati, Showing the Giant Shearing Machine and the Receiving End of the Conveyor at the Right and the Delivery End of the System at the Left



Alvey-Ferguson Cut Scrap Conveying and Loading System Installed at Old Material Yards of Joseph Joseph & Brothers Company, Cincinnati

the shear house, shows at the left the automatic loading device and also the shelter provided for the motor and its drive. A closer view is also given of the unloading end of the conveyer.

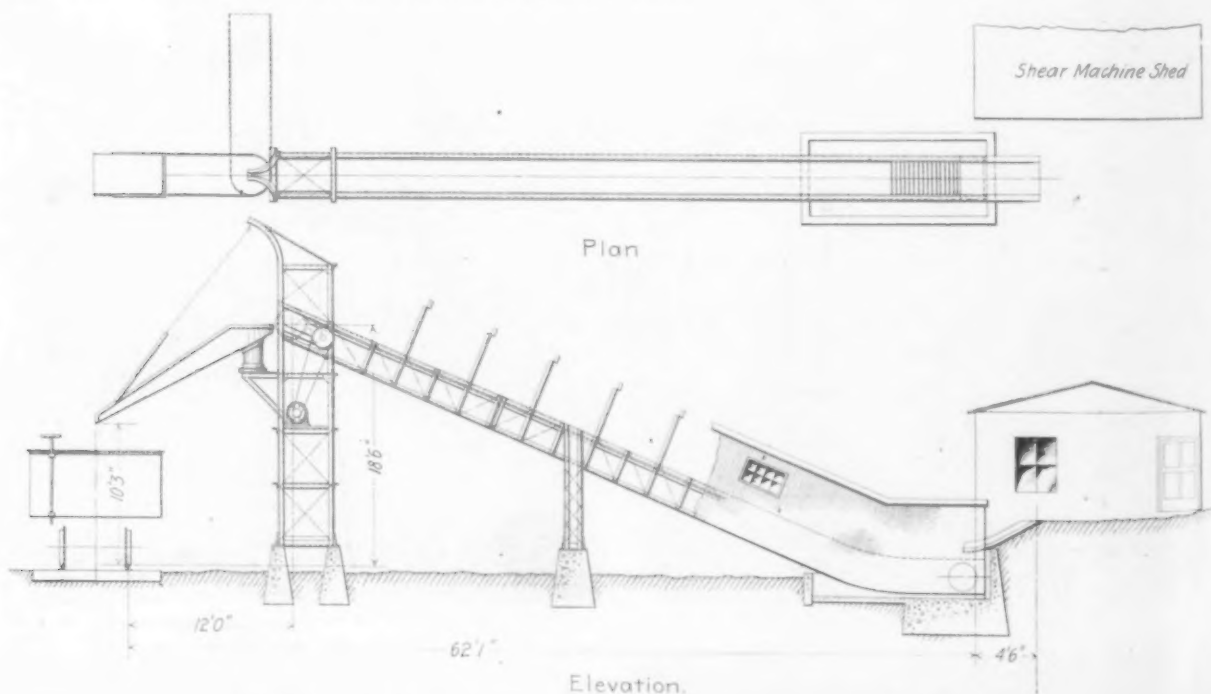
Powdered Coal as Open Hearth Fuel

The fact that a large steel company in this country is planning to experiment with the use of finely powdered coal as fuel in open-hearth furnaces was mentioned in *The Iron Age* of January 9. In *La Metallurgie* Meyer Davidsen discusses this process, which bears his name, and which is proposed for preventing the heat losses of the regenerative furnace and avoiding the necessity of frequently varying the direction of the flow of air. The finely powdered coal is burned above the metal bath. The advantages are thus stated: "All the heat contained in the coal is instantly developed in the very laboratory of the furnace, and all losses in producing the gas in gas producers and preheating it are eliminated. A further advantage of the new process consists in the method of communicating the heat to the metal. The flame produced by burning finely ground coal consists of an extremely large number of minute incandescent particles having a high radiating capacity; there is therefore in the first instance no need to bring the surrounding air to the temperature of the coal particles, the heat being communicated by radiation, and not by convection, and in the second place the flame may be kept high enough above the metal bath to

prevent its contamination by impurities from the coal, and that permits of doing away with the arch, which at best is only a source of trouble and expense. The temperatures obtained in such furnaces are claimed to be very high, closely approaching those of the electric furnace. By the elimination of frequent reversals of the direction of the flame various parts of the furnace are kept always at the same temperature. The rate of the flow of air must be large enough to prevent deposits of ash in the furnace proper."

E. T. Edwards, vice-president Susquehanna Iron Company, Columbia, Pa., has leased from the company its Columbia mill, Susquehanna mill and East End mill department for five years, and will place them in operation at an early date, manufacturing grooved iron skelp and refined bar iron. It is understood that the skelp mill will be ready for operation January 15. All these mills have been idle for some time.

The Meily furnace, Lebanon, Pa., operated for years by J. & R. Meily, will shortly be put in operation by a corporation composed of the heirs of the former owners, under the name of the Lebanon Blast Furnace Company. Extensive repairs to the plant have been practically completed.



Plan and Elevation of the Alvey-Ferguson Cut Scrap Conveying and Car Loading System

Microscopic Study of High Speed Tool Steels

Carbon Conditions as Revealed by the Use of Special Etching Solutions—Familiar Structures Found

A very interesting and important paper on the microscopic investigation of some high speed tool steels appeared in *Stahl und Eisen* November 7, 1912. The author is F. Fettweis, chief chemist and head of the research laboratory of the Becker Steel Works at Willich. These steels have so far been chiefly studied in the forged or rolled condition. The author says that this is to be regretted, as the structure of the steels as cast gives much valuable information regarding their properties. The ordinary etching solutions do not give successful results, and

in their place Herr Fettweis used solutions of copper ammonium chloride and sulphurous acid. The former is used as follows: The section is etched for what is thought a proper length of time, then placed in a glass dish and covered with ammonia. Hydrogen peroxide is added drop by drop until the copper precipitate disappears. A dilute solution is recommended, especially for steels that are easily attacked. The sulphurous acid solution is made by diluting the commercially pure 6 per cent. acid with one-half distilled water. The first steel examined con-

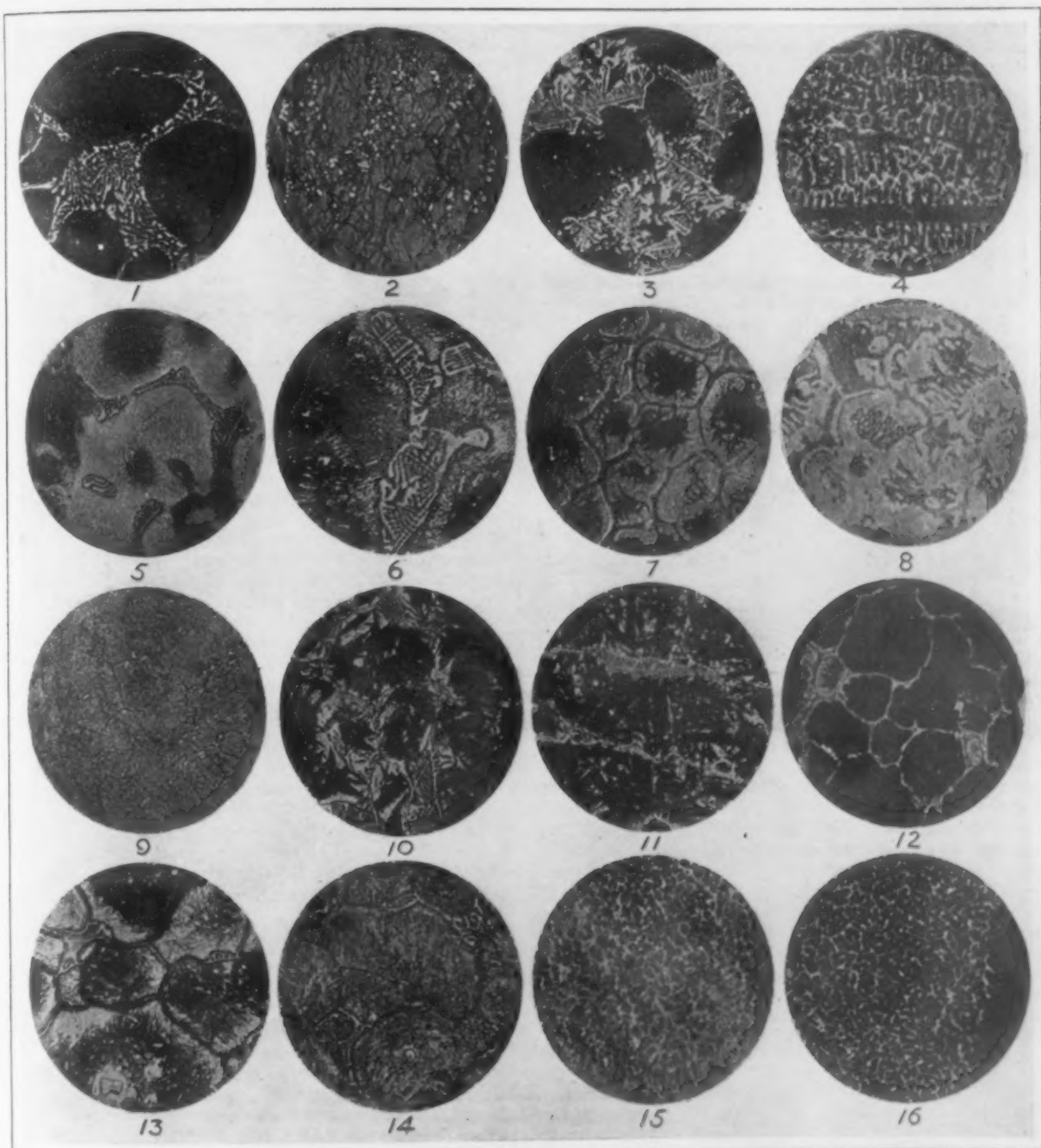


Fig. 1—Cast and Annealed. C, 1.18%; Cr, 14.1%. Fig. 2—Same Steel as Forged. Fig. 3—High Speed Steel, Cast and Annealed. Fig. 4—Cast and Slowly Cooled. C, 0.44%; W, 17.16%; Cr, 4.42%. Fig. 5—Same Steel, Higher Magnification. Fig. 6—Same Steel, Etched More Deeply. Fig. 7—Same Steel, Heated to Incipient Fusion, Quenched in Tallow. Fig. 8—Same Sample, Etched 1 Hr. in 4% Amyl-Alcohol Solution of Nitric Acid. Fig. 9—Forged, Annealed, Quenched in Tallow from Yellow Heat. C, 0.80%; W, 12.84%; Cr, 2.86%. Fig. 10—Same Steel Quenched from Incipient Fusion. Etched with the 4% Nitric Acid Solution. Fig. 11—Same Sample Etched with Sulphurous Acid. Fig. 12—Same Steel Quenched from Complete Fusion. Deeply Etched. Fig. 13—Same Steel Cooled Slowly in Furnace from Incipient Fusion. Etched with Copper Ammonium Chloride. Fig. 14—Same Sample Etched in Sulphurous Acid. Fig. 15—Forged, Annealed, Quenched in Tallow from Incipient Fusion. C, 0.57%; W, 17.21%; Cr, 6.66%; Mo, 0.10%. Fig. 16—High Speed Turning Tool at Extreme Point, Quenched from Incipient Fusion

tained 2.4 per cent. carbon and 13.7 per cent. chromium. The structure of the cast and annealed steel, etched with copper ammonium chloride, consisted for the most part of the eutectic, ledeburite, notwithstanding its low carbon percentage. Forging completely destroys the structure of the eutectic, and the carbide is distributed in streaks through the ground mass. Such a pig iron, for it cannot be called steel, which is near the eutectic point, must have a comparatively low melting point, as was pointed out by the inventor in his patent papers.

In order to determine at about what carbon in a 14 per cent. chromium steel the eutectic appears, a small ingot was cast with 1.18 per cent. carbon and 14.1 per cent. chromium. By a mistake it was heated to about 700 deg. C. after cooling. However, the test was not repeated, for subsequent experiments showed that even with repeated heatings the structure of the eutectic was not changed to any important extent. Considerable amounts of eutectic could still be found in the section etched with copper salt, as is shown in Fig. 1. When only about 1 per cent. carbon is present, the eutectic is not found. The ingot was then forged from 6 cm. dia. to 10 x 10 mm. (0.39 x 0.39 in.). Fig. 2 shows that the eutectic structure has been completely removed. The steel consists of martensitic grains, elongated in the direction of forging, and colored yellow by the sulphurous acid used for etching. They are surrounded by black borders in which is embedded carbide in larger and smaller rounded grains. Fig. 3 shows the structure of a high speed steel taken at random from the regular run of material. Notwithstanding the low carbon, 0.72 per cent., it shows a surprisingly large amount of eutectic. The steel was cast and annealed for a short time.

Carbon-Tungsten-Chromium Steel

The next steel taken for examination contained 0.44 per cent. carbon, 17.16 per cent. tungsten and 4.42 per cent. chromium. The structure as cast and cooled comparatively slowly is shown in Figs. 4, 5 and 6, copper ammonium chloride being used for etching. Figs. 4 and 5, etched 15 seconds, show that crystals of a dark colored solid solution first separated. These are surrounded by clearer borders in which the eutectic lies. Fig. 6 gives the structure after deeper etching, and at 1000 diameters. The dark solid solution is seen to be made up of two constituents, a dark ground mass and clear carbide appearing as lines, or points, or in a columnar structure. From this it follows that the solid solution separating as the metal freezes is not uniform in composition, owing to the low diffusibility. The first part to crystallize is the purest in regard to foreign elements, and so on further cooling there is a secondary carbide separation, corresponding to the free cementite of hyper-eutectoid steels. This carbide separation is completely prevented in the later deposits of the solid solution by the high percentage of foreign elements. The structure corresponds to that of a 2 per cent. carbon steel. If it is heated and quenched in oil, the eutectic does not disappear until about 1200 deg. C. is reached, just as the cementite in a 2 per cent. carbon steel does not begin to disappear until about 900 deg. C. A sample was finally heated to incipient melting and quenched in tallow. The structure was completely changed, as is shown in Fig. 7, etched with copper ammonium chloride. Dark spots appear first with light etching, very irregular in shape and with ragged edges. With longer etching they are eaten away to deep holes. At the same time a raised network is made evident, hardly attacked at all by the solution. In the interior of the network the eutectic can be seen, finer grained than before, forming a continuous cell structure and somewhat greater in amount.

Carbide Content and Hardening Temperature

As the carbide of high speed steels partly comes from the eutectic, it is impossible to cause it to disappear completely by any kind of heat treatment. The lowest amount is obtained by hardening from a temperature just below that of incipient fusion. The etching time of the separate constituents depends very largely on their chemical composition and the hardening temperature. For this reason the same metallographic constituents often behave very differently, so that their recognition is made more difficult. This is especially noticeable with copper ammonium chloride, sulphurous acid working much more uniformly. It is very interesting to note how the ordinary etching solutions fail with steels heated to incipient fusion. For

instance, Fig. 8 shows the same steel given in Fig. 7, but etched for one hour in a 4 per cent. nitric acid solution in amyl-alcohol. The constituents most easily attacked by copper ammonium chloride are first colored brown, then gradually the network in which the eutectic lies is slowly developed.

The next steel tested contained 0.80 per cent. carbon, 12.84 per cent. tungsten and 2.86 per cent. chromium, and was forged and annealed. The sample was heated until one end just began to melt, while the other was at just touching a yellow. It was then quenched in tallow, broken through longitudinally and prepared for examination. Because of the comparatively low percentage of alloying elements nitric acid could be used for etching, but it required about half an hour compared with a few seconds for sulphurous acid or the copper salt. The end heated to the low temperature showed fine grained martensite with many knots of carbide. Advancing along the piece toward the highly heated end, the next structure is that of polyhedrons as shown in Fig. 9. These grow gradually larger, the martensite in them is coarser, and next appears the well known austenite structure of highly heated and quenched high carbon steel. Finally the carbide disappears and eutectic is seen, as shown in Figs. 10 and 11, the first of which is etched in nitric acid, the second in sulphurous acid. Both reagents develop entirely the same structure, as also the copper salt. Fig. 12 shows the structure of the extreme point, which was almost completely melted, after very deep etching for 2 min. in copper ammonium chloride. The ground mass is nearly all eaten away, leaving visible the carbide of the eutectic arranged in a network. A sample was then heated to fusion and cooled very slowly in the furnace. The structure is shown in Figs. 13 and 14, etched respectively with copper ammonium chloride and sulphurous acid. Dark colored grains of martensite can be seen with the peculiar structure brought about by strong heating. They are surrounded by darker borders in which eutectic can be seen.

High Percentage Alloy Steel

Finally a high percentage alloy steel was taken. It contained 0.57 per cent. carbon, 17.21 per cent. tungsten, 6.66 per cent. chromium and 0.10 per cent. molybdenum. It was treated in exactly the same way as the previous sample. Copper ammonium chloride failed completely as an etching medium, the part heated to the low temperature being very strongly eaten away, while the highly heated part was not attacked. Nitric acid also did not give good results, deep holes being eaten in the part heated to fusion, while the spaces between remained untouched. Sulphurous acid showed that the structure was just the same as that of the previous sample. That of the part heated to fusion is shown in Fig. 15. In places the ground mass shows irregular black places similar to Fig. 7; in others it shows clear yellow colored spots surrounded by black borders. A place near the edge clearly showed the austenitic structure and well crystallized eutectic. In order to determine whether the structures found would throw light upon actual working conditions a good turning tool was taken from the shop, the point broken off and examined. It showed the same structure as in the previously described tests, Fig. 16 showing the extreme point after heating to fusion and quenching.

Conclusions

1. The carbide of the so-called carbide steels originates, in the case of chromium and chrome-tungsten steels, from a eutectic corresponding to the ledeburite of carbon steels.
2. By means of high chromium percentages, and still more by means of chromium and tungsten together, the concentration of carbide in the solid solution separating from the fluid metal is so far lowered that free eutectic appears, often with only a few tenths of 1 per cent. of carbon present.
3. The layers of solid solution separating from chrome-tungsten steels with decreasing temperatures are not uniform in composition because of their small diffusibility. In this way the amount of eutectic is still further increased.
4. Alcoholic solutions of acids are unsuitable for developing the structure of hardened high percentage chrome-tungsten steels. In many cases, but not always, copper ammonium chloride gives good results. The best etching medium is sulphurous acid.

5. The same structures and constituents are found, in general, in hardened chrome-tungsten steels as in hardened hypodermic carbon steels.

G. B. W.

A New North Wales Hack-Saw Machine

The latest development of the geared power hack-saw machine of the North Wales Machine Company, Inc., North Wales, Pa., is shown in the accompanying illustration.



Hack Saw Machine Built by the North Wales Machine Company

The general characteristics of the North Wales product, however, were described at length in *The Iron Age* of February 16, 1911, and it will suffice here to mention a few of the properties of the machine. It has a gravity feed, automatically stops after the cut is finished and by means of a swivel vise may cut at any angle to 45 deg. It operates at 70 to 90 strokes per minute and, it is stated, it will cut through a 1½-in. bar of steel in 2 min. The driving shaft runs in brass bushings and the pulley is 12 in. in diameter and takes a 2½-in. belt. The saw frame bearing support is 12 in. long and 8 in. wide. The drive, it should be added, differs from the machine previously referred to, the saw blade being in line with the reciprocating rod.

Norton Companies' Conference

The Norton Company and the Norton Grinding Company, Worcester, Mass., added a feature to their annual sales conference last week by holding an open session Thursday afternoon at which were present a large number of manufacturers, users of abrasive wheels and grinding machines, from all over the Eastern States. The visitors listened to several instructive papers, which were illustrated by stereopticon views where necessary.

The speakers were Dr. W. Irving Clark, head of the Norton Company's medical department, who outlined the work which has been done in increasing the efficiency of the works through improved medical care and inspection and sanitary betterment; L. E. Saunders, superintendent of the Niagara Falls plant, where electric furnaces for the manufacture of alundum are located, his subject being "Modern Abrasives and Their Manufacture," and Charles H. Norton of the Norton Grinding Company, on "The Modern Grinding Machines and Their Service to the World." Small models of the electric furnaces were shown in operation, manufacturing alundum, and there were exhibits of alundum and crystolon in all stages of manufacture, together with a complete exhibit of the products of the two abrasives.

Just before noon a memorial service was held, conducted by Rev. Henry Stiles Bradley, for Milton P. Higgins, who was president of the Norton Company and the Norton Grinding Company; Arthur C. Scott, formerly sales manager in Great Britain; George H. Stone, for-

merly manager of the Chicago office, and Samuel F. Hall, works engineer, who was killed in an elevator accident the day before.

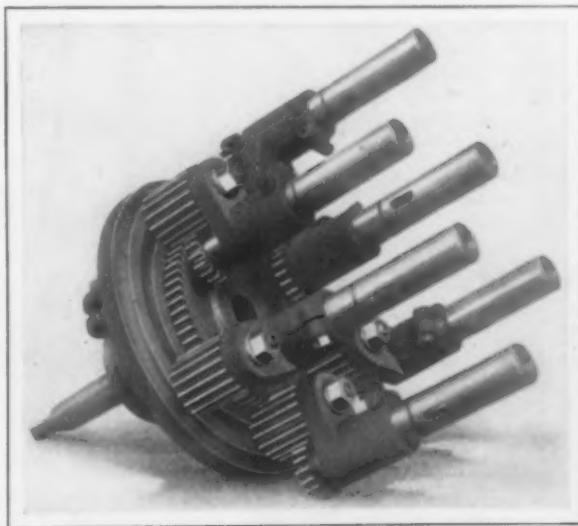
A Universal Multiple-Spindle Drill Head

A universal multiple-spindle drill head has recently been put on the market by W. E. Scallan & Co., Gest street, Cincinnati, Ohio, designed to eliminate the use of the knuckle-joint adjustable center auxiliary, or the geared fixed center heads commonly in use.

The No. 1 device, given the name Sterling, shown consists of an adjustable center geared head, having a maximum bolt of 11 in. and minimum of 4¼ in. Any number of spindles, from 2 to 12, may be used, and as the spindles are adjustable to drill at any point within the limits given, an almost unlimited variety of irregular spaced layouts can be handled. In other words, it is emphasized that practically a universal adjustment can be made without the use of universal joints, spur gears being used for driving the spindles. This arrangement is claimed to give the device greater rigidity and a long life. While the closest center distance between the spindles on the No. 1 head is 2 in., other sizes are in preparation to place drills closer.

It is claimed that the head can be attached to any drilling machine within two minutes by simply placing the shank in the taper hole of the drill spindle. Rotary motion is prevented by means of a clamp that is fastened to the quill of the drilling machine. For the same purpose a bar is also furnished that extends from the body of the drill head to the column of the drilling machine, the latter being principally for use on upright machines.

A vertical adjustment is provided for the spindles to accommodate different lengths of drills. The spindles are hardened and ground, and ball thrust bearings are pro-



The Sterling Multiple-Spindle Drill Head

vided to take up the thrust on each spindle. The gears are of alloy gear steel, with coarse pitch, and are covered with a guard not shown in the illustration. Hardened nuts and cap screws are used.

In a neatly illustrated, vest pocket pamphlet the Missouri Geological Survey shows that Missouri leads all other States in the production of zinc, lead, barytes, and tripoli; has important seams of coal, the finest limestone and granite, the highest grade fire clays and glass sand, extensive deposits of cobalt, nickel, copper, pyrites, iron ores, mineral paints, and abundant mineral waters. Small illustrations show typical mines, mills and quarries, while the distribution of the various deposits is indicated by a double page outline map. A list of the reports of the Survey available for distribution is also given. Copies of the pamphlet can be obtained from H. A. Buehler, State geologist, Rolla, Mo.

The reference to castings in the article descriptive of the Oliver typewriter works in *The Iron Age* of January 2 should have emphasized that these castings are bronze and not brass.

New Canadian Pacific Coal Handling Plant

Hulett Ore Unloading Type of Machine Designed for New Use—Breakage of Fuel Reduced by Use of Large Buckets

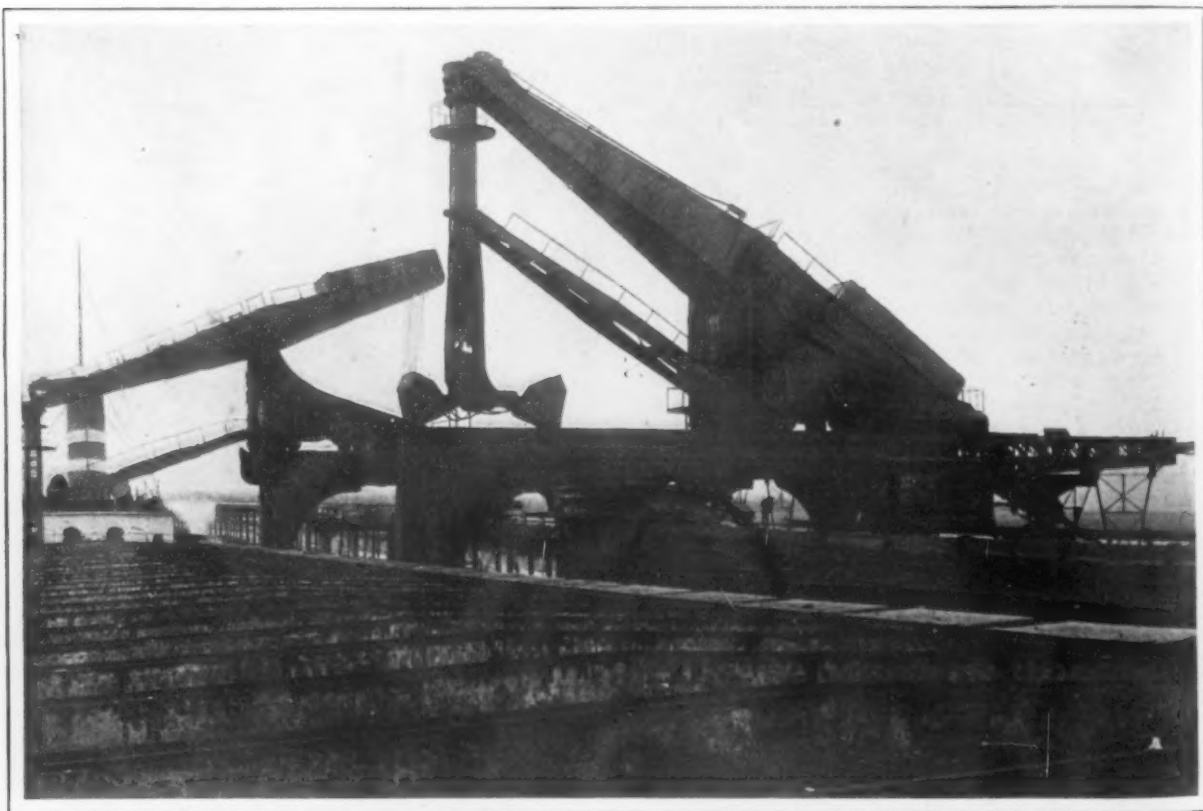
A radical departure from the usual method of unloading coal from lake boats by means of grab buckets has been adopted by the Canadian Pacific Railway Company in a new coal-handling plant built by that company at Fort William, Ont., and recently placed in operation. This plant was built by the Wellman-Seaver-Morgan Company, Cleveland, Ohio, and is equipped with Hulett unloaders of the same general type as the ore unloading machines built by this company, numbers of which are in operation at several of the larger ore handling plants at Northern Ohio ports. The Fort William plant is the first installation of Hulett equipment for the handling of coal.

One of the important advantages claimed for this plant is that much of the breakage of coal will be eliminated and it is stated that the results of the use of Hulett unloaders justify the claim. The amount of breakage is reduced largely by handling the coal in larger units than has been done by the usual grab bucket method. The coal is taken from the boat in an 8-ton bucket attached to the leg of the unloader. In coal handling plants that use grab buckets for unloading the largest coal buckets have

plant is that the coal loading is at the front of the dock, instead of in the rear of the handling equipment. With the transfer system employed the storage yard can be made as long as desired independent of the length of the face of the dock. In the Fort William plant the storage yard is over 1200 ft. longer than the dock face, and this can be further extended as desired by extending the bridge runway and trestle.

Coal docks at the upper lake ports are generally well supplied with unloading facilities, but it is claimed that the weak point in many of these handling plants is their limited shipping facilities, not having enough shipping bins. The Hulett unloaders make possible the laying out of a plant with the maximum bin capacity, this bin capacity allowing a small unloading plant to handle and ship out direct a relatively large amount of coal, thus effecting economy and reducing breakage by doing away with rehandling.

The Fort William plant consists of two Hulett unloaders equipped with 8-ton buckets, a rehandling and stocking bridge 475 ft. in length equipped with a 9-ton, two-



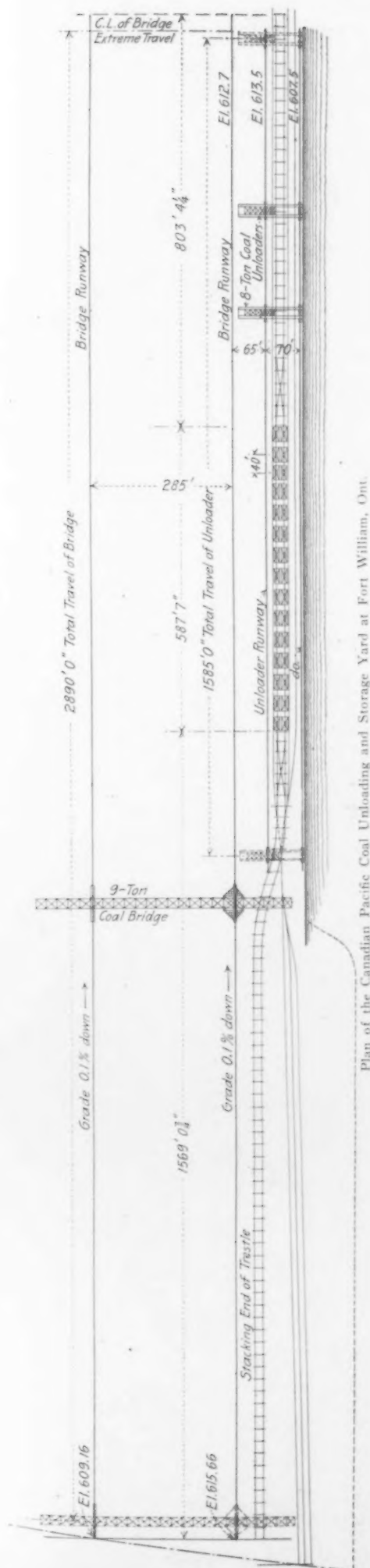
Two Hulett Unloaders for Handling Coal

a maximum capacity of $5\frac{1}{2}$ tons. As a part of the handling plant there is a rehandling and stocking bridge equipped with a 360 cu. ft. bucket, having a capacity of 9 tons, which is said to be the largest coal handling bucket ever built.

The installation of the Hulett handling equipment has permitted the arrangement of the entire plant materially different from the layout of the grab bucket plants, and this method of handling, it is claimed, permits an economy of space and the installation of a plant of fairly good capacity where the available water frontage or dock space is limited to about 600 ft. or the length of the largest coal boats. The arrangement of the plant is shown in the accompanying drawing of the layout. An important difference in the method of coal handling in this

part Hulett excavating bucket, transfer cars, three electrically driven scale larries with a capacity of 35 tons each, 30 steel bins with a capacity of 40 tons each, and necessary tracks, trestles, box car loaders and power equipment. The bins are located under the trestle and are arranged in two rows of 15 bins each spaced 40 ft. between centers and located lengthwise with the track, their location being shown in the drawing. This arrangement allows for the spotting of 30 cars on the track at one time. Each unloader has a capacity of 450 to 500 tons, so that one of the largest lake freighters with a 12,000-ton cargo can be unloaded in about 12 hr.

The coal is taken from the boats by means of the excavating buckets of the unloaders and discharged into a conveyer car with which each unloader is provided. This



car discharges it into the scale laries for charging the bins or discharges it directly into the storage pit under the cantilever of the unloader in the rear, to be rehandled and placed in stock and again rehandled from stock by means of the 9-ton rehandling bridge back of the unloaders and covering the storage yard. The conveyer or transfer car runs on tracks supported beneath the main girders of the machine. This car, which is built in the form of a steel bin, is provided with gates for discharging the coal, and these gates are so arranged that the car can be dumped at the will of the operator in any position in its runway. The capacity of this car is two buckets of coal and its speed is regulated so that it will convey coal either to the inner stock pile or to the scale laries above the bins underneath the unloaders as fast as it can be delivered by the bucket. This car is specially designed to withstand severe service.

The coal is dumped from the scale laries into the bins beneath the trestle. When open cars are loaded the fuel is chuted directly into the cars from the bins. As coal in the West is usually hauled in box cars, two box car loaders are provided for loading cars of this type. Each bin consists of a hopper and is provided at the bottom with a gate for controlling the discharge of the contents and also with a movable spout for chuting the coal into box cars. For loading the box cars two specially designed double-end box car loaders were installed, being furnished by the Christy Box Car Loader Company. These box car loaders travel on independent tracks beneath the bin columns.

The bins are built of stiffened steel plates and are carried on heavy girders supported on heavy steel columns. The discharge spouts are arranged to discharge coal to cars standing on either side of the bins. Above the bins is a double line of tracks for the scale laries, as stated. A system of cross-overs is provided for passing the cars from one track to the other. The bins are of such a height that the distance between the top of the rails on the dock and the top of the rails on the bins is 22 ft.

The total length of the dock is approximately 3000 ft. The bins and trestle cover a space 2890 ft. long. That portion of the dock not covered by the bin system is supplied with single-track trestle. Coal that is not placed in the bins and which for lack of room or other reasons cannot be placed in the regular storage yard by the unloaders is dumped by scale cars from this trestle to be rehandled by the bridge.

The scale laries are electrically driven cars of special design, being built low and flat so that they clear by but a few inches the unloaders, under which they run. The larry consists of a double hopper carried on scales supported on a structural frame mounted on trucks. A scale beam is located in the operator's cab at one end of the car. As the scale beam records automatically, the weigh-master has no calculations to make. The bottom of the hopper is provided with two outlets, the discharge of coal from these outlets being controlled by undercut gates. These gates are operated by air cylinders arranged so that the gates can be opened independently or simultaneously as desired. The controlling valves are located in the operator's cab. The air for operating the gate cylinders is supplied from a small compressor conveniently located in the car body. The trucks are of the standard arch bar equalizing type, and each is supplied with an electric motor for propelling the car, the controller for the motors being in the operator's cab. Air brakes are provided.

At the cantilever end of each unloader a device is provided to reduce to the minimum the breakage of coal discharged into the storage pit. This device, which is shown in one of the illustrations, consists of a moveable chute adjustable for inclination so that it can be fixed at the same inclination as the natural flow of coal on the pile, and with a telescope arrangement so that it can be raised as the coal pile becomes higher.

The frame work of each of the unloaders is supported on trucks designed to travel along the dock. The frame work forms a runway on which is mounted a trolley operating a walking beam and bucket leg, the excavating bucket being attached to the lower end of the leg. The operator, who controls the motion of the trolley and bucket leg, is stationed just above the bucket and travels with it in and out of the boat, as in the ore unloaders. From this position he can readily see his work at all times. A second operator is stationed in a cab at the rear end of each ma-



General View of the Coal Handling and Storage Plant

chine and controls the operation of the bucket car as well as the travel of the machine along the dock. The unloaders have a travel of 1585 ft. A third man is required as an oiler.

The trolley rails are about 33 ft. above the main runway rails, being designed so as to give a clearance for the scale larries. Each unloader is mounted on four 4-wheel equalizing trucks, two under the front leg and two under the rear leg of the machine. These trucks have ball and socket bearings to give flexibility and to provide for slight unevenness in the tracks. The suspended bucket leg is supported from the outer end of the walking beam by cast-steel trunnions and is carried on these trunnions by means of a swivel bearing which permits the leg to be rotated at any angle. This enables the bucket to reach almost all parts of the hold of the vessel. In boats with hatches with 24 ft. centers this reach covers more than half the distance from that hatch to the center of the adjoining hatch. Four controlling levers for the operation of the bucket and trolley are located at the bottom of the bucket leg convenient to the operator.

The bridge consists of double-riveted trusses supported

by a tower at the dock end and a shear leg at the rear end. The supporting legs are mounted on trucks which travel along the runway. The bridge has a travel of 2890 ft. The runway for the tower leg is about 8 ft. above the top of the dock, and the runway for the shear leg is about 4 ft. above the dock. The towers are so located as to form a main span of 285 ft., with a cantilever overhanging the main tower 100 ft. long and a cantilever overhanging the shear leg 90 ft. long. The height of the bridge above the dock is sufficient to give the necessary clearance over a stock pile 40 ft. high. The cantilever at the forward end of the bridge is of sufficient length to allow the bucket to discharge coal directly into cars standing on the bin tracks. The lower cross beams of the bridge support the track on which the bucket trolley travels. This trolley contains equipment for operating the bucket and the cross-transversing motion, the movements being controlled from the operator's cab on the trolley. The motor for traveling the bridge along its runway is located in a stationary position on the bridge. The two trucks under the tower and the two under the shear leg are connected by spur and bevel gearing and shafting to the



One of the Scale Larries for Weighing and Delivering Coal to Bins

long. The travel motor. The connections between the bridge shaft and the vertical driveway shafts on the supporting legs are provided with flexible couplings.

The trolley is carried on eight cast-steel wheels keyed to axles which run in bronze bearings. Two pairs of wheels are connected by spur gearing to trolley travel motor. The two hoisting motors are geared to the double drums upon which the bucket operating ropes are wound. One of these motors is connected by spur gearing to the hold rope drums and the other to the hoisting drums. These motors act in unison in hoisting the load. Each motor is supplied with a solenoid brake, designed to set as soon as the current is cut off, thus providing a safety device to prevent dropping the load in case of failure of the current.

The bucket operating motors are compound wound and are so arranged as to be used as a dynamic brake when lowering the bucket. The trolley is controlled by brakes attached to the trolley travel axles, these brakes being operated by an air cylinder. The compressor and reservoir for supplying air for the brakes are located in the operator's house, with air valves conveniently located for controlling the brake cylinders. The operator's house at one end of the trolley framework contains all of the necessary levers for controlling the motion of the trolley. The controller for the bridge travel motor is placed in a stationary position on the bridge within easy reach of the operator's cab. All gears in connection with the trolley are of cast steel and high-speed gears have cut teeth. The drums are steel castings. The bridge has a travel of 75 ft. per minute, its hoisting speed is 175 ft. per minute and the trolley travel is 800 ft. per minute. The bridge under favorable conditions will handle, it is expected, 500 to 700 tons of coal per hour.

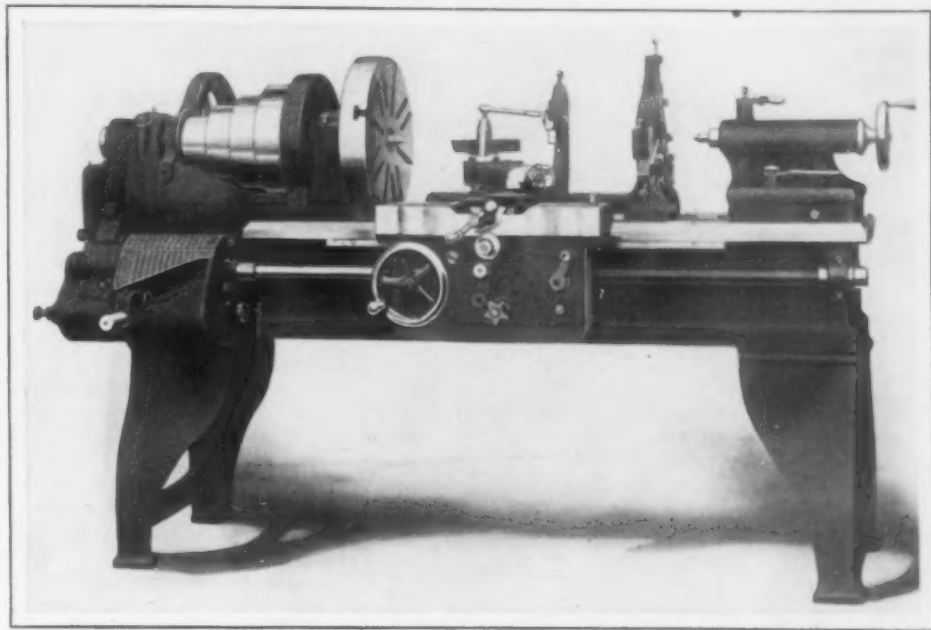
The motor equipment of the plant consists of the following: One 100 hp. motor for moving each unloader along the dock, this motor being connected by spur and bevel gearing and shafting to the track wheels and designed to move the unloader at the rate of 75 ft. per minute. To this motor a car haulage drum is geared so as to give the bucket car a speed of about 300 ft. per minute. Each unloader bucket is operated by a 75 hp. motor controlled by a magnetic controller. Each unloader has a 50 hp. trolley travel motor geared to large pinions that engage racks on the main girders. This motor has a magnetic control. The bucket leg is rotated by a 25 hp. motor. The walking beam is hoisted by a 150 hp. compound-wound motor geared to cast-steel drums. The motors and gearing are designed so that the machine can be kept in continual operation at the rate of one cycle in 50 seconds. The bridge is equipped with two 200 hp. motors for hoisting, two 50 hp. motors for trolley travel and one 100 hp. motor for bridge travel. Each scale larry is operated by two 35 hp. motors. All the motor equipment was furnished by the Westinghouse Electric & Mfg. Company. The controller equipment was furnished by the Cutler-Hammer Mfg. Company, Milwaukee.

Unusual precautions were taken in the construction of the plant to protect workmen from injury. The electrical equipment includes a stepdown transformer and converter, reducing the electric current to 220 volts direct current, the principal reason for providing the low voltage being that it is less dangerous to life. Motors are provided with automatic safety devices, such as slow downs and cut outs where such devices add to the safety of employees. Other means of protection against accidents include guards for all gears and stairs with hand rails in place of ladders.

New 16-In. Cisco Engine Lathe

A 16-in. engine lathe for which particular claims are made for simplicity of construction and operation has been brought out by the Cincinnati Iron & Steel Company, Cincinnati, Ohio. Two levers suffice for making the entire change in feeds or threads, which changes are made without changing the gears. In addition a safety device is provided between the feeds and the lead screw, an arrangement to make it possible to engage but one at a time. The apron is of the double plate type with a back support and the feeds are obtained by means of a multiple pitch steel worm and bronze worm wheel running in oil to insure smooth feeding. The maker feels that the machine has one of the heaviest aprons of any lathe in the market.

A view of the machine is given in the accompanying illustration. One of the gear boxes for making feed changes is shown at the left of the machine. A pull pin at the extreme left gives two runs through the gear box and



The 16-In. Lathe Built by the Cincinnati Iron & Steel Company, Cincinnati, Ohio

above it may be seen the pull pin for the upper gear box. The tail stock as shown has a long barrel and the steady rest is designed for large capacity. The gears it will be noted are covered.

Considerable emphasis is placed on the few working parts involved in the lathe apron. Longitudinal and cross feeds are independent but obtained through the same friction and can be reversed in the apron. The cross feed and top slide screw are provided with micrometer graduations. The swivel slide is graduated on each side. Some of the dimensions of the lathe are as follows:

Swing over V's, in.....	17 3/4
Swing over carriage, in.....	11 1/2
Takes between centers, in.....	37
Diameter hole in spindle for stock, in.....	1 1/2
Spindle center (Morse number).....	3
Diameter largest step on head cone, in.....	12
Diameter smallest step on head cone, in.....	5 1/4
Width of belt on head cone, in.....	3
Threads will cut per inch.....	3 to 64
Range of feed per inch.....	12 to 256
Changes of feed.....	38
Diameter of large face plate, in.....	17
Size of cutting tool max. in.....	1 1/4 x 3/4
Guaranteed .001 in 18 in.	
Net weight, lb.....	2350
Floor space for 6 ft. bed, ft.....	7.5 x 3
Add 2 ft. in length for each extra 2 ft. of bed.	

The International Acheson Graphite Company, Niagara Falls, N. Y., has appointed Richard Cary sales manager of its lubricant department, which department handles the lubricants known to the trade as Oildag, Aquadag, Gredag. The company's plans provide for a wider and more thorough distribution of its products, especially through the regular trade channels. By this means, and by thoroughly co-operating with the dealers, it is expected to broaden the business materially and enable users to procure these products without delay.

Compressed Air as a Foundry Auxiliary

An Enumeration of the Important Applications of Pneumatic Tools Used in the Making of Castings

The Newark Foundrymen's Association, Newark, N. J., at its monthly meeting held January 8, was addressed by William H. Armstrong, Ingersoll-Rand Company, New York, on "The Use of Pneumatic Tools in the Foundry." The paper was illustrated with lantern slides. In his introductory remarks Mr. Armstrong said he did not pose as a practical foundry man and therefore would not attempt to discourse on foundry practice, but would limit his remarks to those air appliances which lessen labor, increase output and decrease the cost of foundry production. He remarked also that as the subject was not a new one he

These remarks refer not so much to the large foundry which maintains a good size power plant, either for itself or jointly with other departments of the works, as to the independent jobbing foundry which produces such a large percentage of our total foundry product.

Some Air Tools of Recognized Value

"The value of the pneumatic chipping hammer in a foundry, as a saver of time and labor, is so universally conceded that the time has passed when it is deemed necessary to submit comparative figures, especially as much depends upon the conditions of operation and efficiency of the air plant. But suffice it to say that for all classes of chipping in foundry work, such as chipping fins off castings, cutting gates, risers, buttons off anchors, and general trimming, one man with one hammer of the proper size will do as much work as three or four men chipping by hand. These tools are made in different sizes, with piston strokes of 1 to 5 in., to meet different conditions. It is important that the proper size tool should be selected for the work, to insure the best results, the short stroke tools begin intended for the lighter work, requiring a light and very rapid blow, the longer stroke tools for the heavier work, requiring a heavy and slower blow. The medium sizes, with 2 and 3 in. piston stroke, are the sizes most generally used for foundry work.

"The rotating air drill is another very familiar labor-saving device, though its field of usefulness in a foundry is somewhat limited. It is more particularly a general shop tool, possessing a very wide range for drilling, reaming, tapping, flue rolling, running in stay bolts, studs, and other applications seemingly limitless. It has established itself next to the pneumatic hammer as a most generally used air tool.

"In portable air tools the sand rammer is unquestionably the next in importance to the chipping hammer, as applied to foundry work, and due to the market improvements that have been made in the construction of this device, which tend to lessen the shock on the operator, and the education of the operators in the proper way to handle them, it has made a permanent place for itself, even against strong opposition, on the grounds of economy, lower production cost, larger output and improved quality of product which follow its use, and the adoption has become more general.

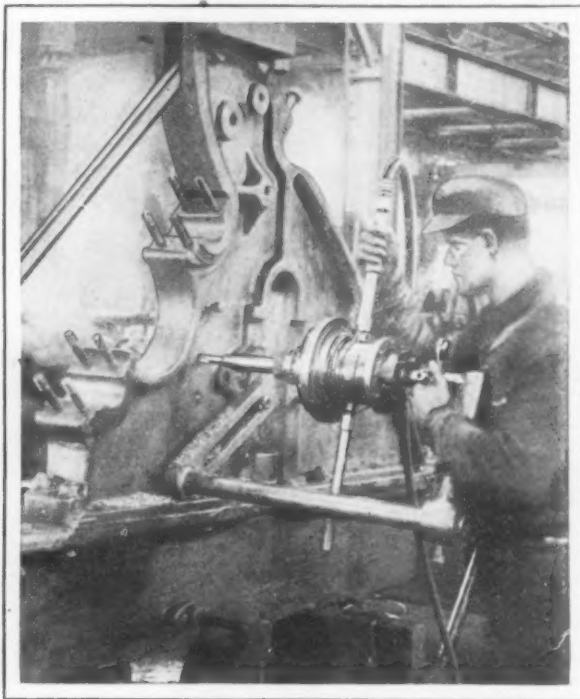
"The pneumatic rammer does much more than merely to supply the power for the work. It also changes the character of the ramming and gives the operator a variety of execution in the ramming which his muscles, at the best, could not command. The force, the direction, and especially the rapidity of the blows are so completely under the control of the operator that we might compare the manipulation of the rammer to the playing of a musical instrument. It relieves the moulder of the most fatiguing detail of his work."

What a Sand Rammer Can Do

After describing several bench and floor rammers, illustrations of which were shown on the screen, Mr. Armstrong went on: "The accompanying figures show the result of some observations made in representative foundries all over the country. They are not merely test figures, but show what can be accomplished with the pneumatic sand rammer under everyday working conditions. In another instance, a pulley 78 in. in diameter with 24 in. face, was peined and rammed complete in three hours.

"In discussing recently the question of pneumatic sand rammers with the superintendent of one of the best organized and most representative foundries in this country, he made the following comments:

The pneumatic sand rammer for foundry work has demonstrated that it is one of the greatest friends and labor savers of the pro-



An Application of the Rotary Air Drill

probably would not describe any device that was unknown to his hearers and would endeavor to direct attention only to those devices whose commercial value had been proved in actual service. In part Mr. Armstrong said:

"The first and most important factor in a compressed air installation is the air compressor. The average jobbing foundry requires a compressor of 300 to 500 cu. ft. piston displacement. Large foundries may use up to 1500 or 2500 cu. ft. Novelty foundries usually require small machines of 50 to 100 cu. ft. displacement.

"Great care should be exercised in the selection of the compressor, as all the working apparatus and final results rest on the character of the machine installed. There are no general conditions which will apply equally in all cases—each installation requires careful individual consideration. The most economical power available generally determines the type of compressor, that is, whether belt drive from line shaft or from electric motor, direct drive from motor rotor, or direct steam drive. Price should not be considered so much as service.

Compressors Should Be Dirt Proof

"The foundry compressor should be as nearly dirt proof as possible and as nearly automatic in its operation as it can be made. Machines that would give perfect satisfaction when operated in connection with a power plant and in charge of skilled engineers frequently go to pieces when installed in a foundry where skilled mechanics are not so readily available, where the machine has to take care of itself and where dirt and dust abound.

green foundryman today. When the sand rammer was first introduced there was some criticism concerning it, mainly arising from the natural antipathy mechanics had for anything in the machine line, but as the operators became familiar with its use and realized its effectiveness, this feeling rapidly disappeared. Today in the foundry the men take kindly to these rammers, and use them for work of every description.

Some writers claim that while sand rammers are valuable for ramming drags, they cannot be used successfully on copes. We have exploded this contention completely in our shop and use the rammers on both copes and drags indiscriminately and with equal success.

The sand rammer is often put up against the jarring machine, and many claim that with the introduction of jolt machines the efficiency of the sand rammer is materially diminished. We have found this to be the case. For medium size work that is made in quantities, we believe the jolt machine to be indispensable; even with this, however, the rammer is a very important factor in butting off the tops of the jolt rammed moulds. When larger patterns are rammed, such as engine beds, sole plates, sub-bases, etc., it has been our experience that the sand rammer is equal, if not superior, to the jolt machine. This statement is made upon taking into consideration the expense and labor incident to rigging up a pattern for use on a jolt machine, the tendency the mould has to sag upon being rolled over, the bolting on the plates before rolling the drag and such other details as are encountered in rolling over a large job. On the other hand, if the pattern is bedded in the ground or flask and rammed up with pneumatic rammers, which may be done with unskilled help, much of the expense and delay is eliminated, while we are sure of a perfectly true job, conforming to every detail of the pattern.

The pneumatic bench rammer is a very handy tool as an auxiliary to the larger rammer. This rammer is very satisfactory for ramming under a shelving pattern where the construction of the pattern is such that it is difficult to ram under it with the larger tool. We find the bench rammer practically indispensable for work of this nature.

Speaking generally, it is my opinion that the sand rammer has increased our efficiency in this line fully four or five times, and since we have had them installed we would regret very much to be obliged to go back to the old way of ramming.

Saving Accomplished with Pneumatic Sand Ramming

Size of Cope.	Time in Peining and Ramming.		Time Saved, Per cent.
	By Hand.	By Sand Rammer	
12 ft. x 18 in. x 4 in.	5 min.	1 min.	80
12 ft. x 18 in. x 10 in.	10 "	1 1/2 "	85
6 ft. x 3 ft. x 6 in.	20 "	3 "	85
6 ft. x 6 ft. x 8 in.	35 "	8 "	77
8 ft. x 6 in. x 6 in.	1 hour	10 "	83
7 ft. x 3 ft. x 12 in.	1 " 30 min.	16 "	82
13 ft. x 30 in. x 16 in.	2 hours	27 "	77
12 ft. x 7 ft. x 16 in.	2 " 12 "	34 "	74
87 in. x 159 in. x 10 in.	4 "	40 "	83
19 ft. x 90 in. x 15 in.	8 "	1 hour 30 min.	81

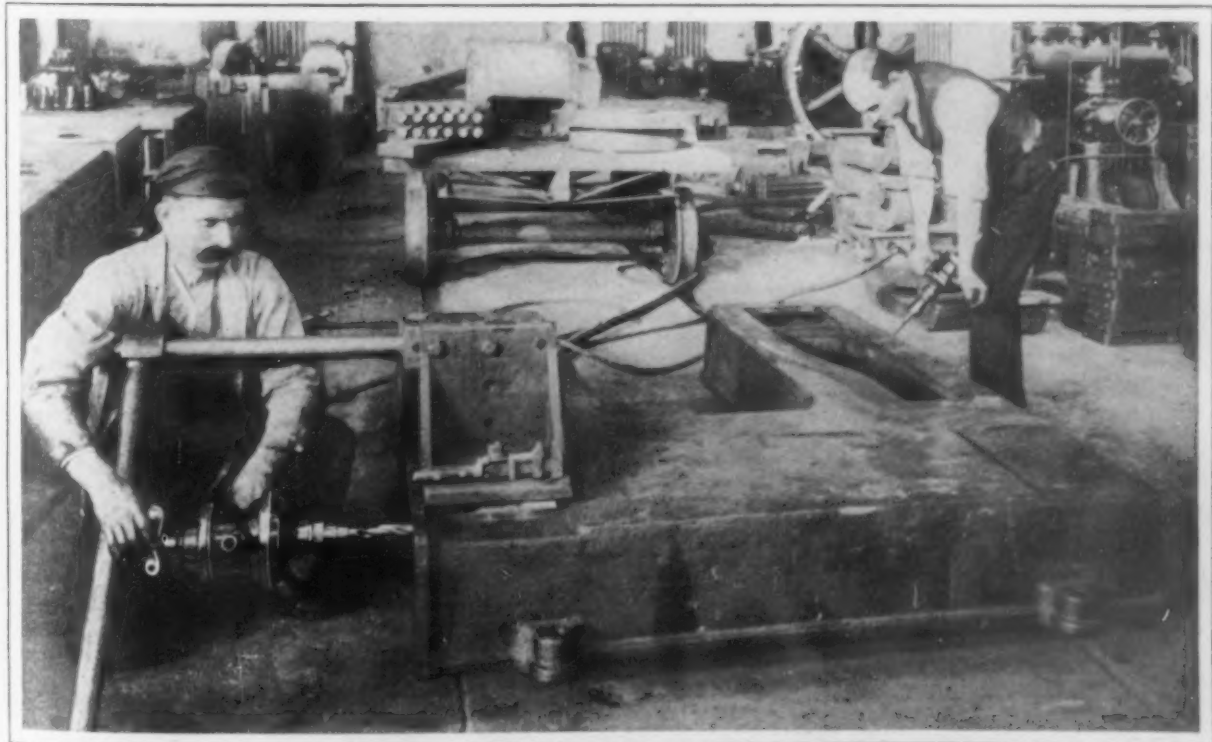
Operation Cost of the Air Hoist

"The air hoist is valuable in conveying flasks outside of foundry to storage sheds, patterns to pattern shop, or finished castings to machine shop; also for lifting flasks and copes, drawing patterns, conveying cores to ovens, for operating cupola elevators and core oven doors. The most common types of air hoists are simple cylinder hoists, either vertical or horizontal, although the motor geared type of hoist is being very largely adopted for heavy traveling on jib cranes. Either of these types may, in many instances, be applied to hand power cranes already in use, without in the least interfering with the gearing, and at very small expense. In the air hoist the power and load are brought together in the most simple manner. A boy, with this aid, can lift a given load a dozen times, while a gang of several men would be operating a chain block or windlass. There is practically no noise, no jar, and the load is always balanced. In foundries where an overhead traveler cannot be installed, air hoists, suspended from trolleys running on a track, are very satisfactory.

Air Hoist Table Compiled by Frank Richards.

Diam. of cyl.	Effective area of piston.	Maximum weight lifted.	Cu. ft. of free air per 4-ft. lift.	Cost of air per 100 lifts.
2	3.05	274	0.74	\$0.0037
3	6.87	618	1.67	.0084
4	12.22	1099	2.97	.0149
5	19.09	1718	4.64	.0232
6	27.49	2444	6.68	.0334
7	37.42	3367	9.09	.0455
8	48.87	4398	11.88	.0594
9	61.85	5566	15.03	.0752
10	76.36	6872	18.56	.0928
11	92.39	8315	22.46	.1123
12	109.96	9896	26.73	.1337

"Few realize how cheap an air hoist is to operate apart from its convenience and speed in handling loads. It has been estimated by Frank Richards, a well known writer on compressed air subjects, that at 100 lb. gage pressure compressed air costs five cents per 1000 cu. ft. of free air. In an interesting article published, this gentleman gives a very interesting table (a copy of which I incorporate in this paper) of the lifting capacities of direct-acting air hoists, with volume of free air per lift, and cost of air per single lift and per 100 lifts, with a maximum lift of four feet and a maximum pressure of 90 lb., air furnished at five cents per 1000 cu. ft. of free air. In this table he shows that a hoist 6 in. in diameter with a piston rod 1 in. diameter and lift 4 ft. using air at 90 lb. pressure and figuring 30 per cent. to cover all contingencies including the taking up of the slack of the hoisting chain or other means of attaching to the load before hoisting actually commences, will lift more than a ton to a height of four



Rotary Air Drill at Work on Bedplate in Phillipsburg, N. J., Shops of Ingersoll-Rand Company

feet, at a cost of \$0.00035. A hundred such hoisting operations will be made, of course, for \$0.035, or three and one-half cents."

Molding Machines of Unquestioned Value

Other devices touched upon and illustrated by Mr. Armstrong were air motors, molding machines and jolt ramming machines. Of the molding machine, he said, among other things:

"The molding machine has also taken a very prominent place among foundry labor-saving devices, enabling increased output and a higher grade of product. At first, there was considerable opposition on the part of skilled molders to the adoption of this machine, and it was looked upon as a foundry luxury. It is now looked upon as a foundry necessity. The molding machine is equally well operated by highly skilled workmen or by the ordinary laborer. The economy required of foundry managers in all lines of work makes imperative the introduction of some type of molding machine. Practically every line of castings can now be successfully and economically molded on either power or hand machines. The range has been broadened to meet every modern condition of foundry practice; and the installation of the molding machine is now merely a question of type and local conditions. The degree of efficiency obtainable is a matter of personality, and the right machine. These machines are operated by compressed air at a pressure of 60 to 80 lb.

High Versus Low-Pressure Sand Blast

"There is hardly an operation in a foundry of greater importance, and which contributes more to a satisfactory factory product, than the proper and thorough cleaning of castings. It has been an operation requiring time and patience, and involving heavy expense. The cleaning of castings is a subject that has been given unusual attention, being followed by experiments with various and sundry methods and devices for the successful and economical accomplishment of the desired results, including brushing, tumbling, pickling, blowing, etc. These methods have each shown marked advantages as applied to particular classes of work, but as a commercial proposition for all classes of castings, large, medium and small, steel, iron, aluminum and brass, the solution has been found in the sand blast, and here again, compressed air plays a most important part and shows its superiority over other actuating powers for general foundry work.

"The sand blast, however, is by no means a late development, but it is only within recent years that it has been perfected to a stage where it produces satisfactory results, as applied to both external and internal surfaces, and also to crevices, and combines economy in power, that is, in the consumption of compressed air, with effective savings in both time and labor, and a resultant total economy.

There are many makes, styles and kinds of sand blast apparatus on the market, and superior points are claimed by the manufacturers for each, some advocating the use of air under high pressure, and others under low pressure. The proper air pressure for sand blasting as applied to particular classes of work, has been the subject of much discussion among foundrymen and also sand blast manufacturers, and numerous theories have been expressed through the trade journals. There have also been a number of tests conducted on different classes of work, with varying air pressures, and the consensus of opinion as expressed in the reports of these various tests, at least so many of them as it has been the writer's privilege to read, seems to favor the high pressure blast for all classes of work. It is conceded that the volume of air required is governed by the size of the opening in the sand blast nozzle, and the pressure maintained, based on the standard flow of air at a given pressure through a given size orifice. Therefore, the higher the pressure, the greater the volume of air used, but the amount and quality of work done increases correspondingly without added labor costs. It has been proven in these tests that twice as much work can be done at 50 lb. pressure as at 20 lb., at 64 lb. as at 30 lb., and at 72 lb. as at 40 lb. It has also been shown that for gray iron and malleable castings they can be cleaned best and quickest with an air pressure of 80 lb.—brass and aluminum castings at not lower than 60 lb., while for steel castings, the hardest to clean, not less than 90 lb. The character of the

material and its ability to withstand the impact of the sand will determine the pressure adaptable."

Mr. Armstrong quoted and illustrated many concrete examples of time and expense saved in cleaning castings, such as gas engine cylinders, car couplers, etc., and said, also:

"As a result of a very thorough test of the economy of sand blast cleaning, conducted by one of our leading technical schools, in collaboration with one of our largest steel foundries, I am able to give in tabulated form data showing that the total cost per ton for cleaning castings, with a modern high pressure sand blast, is less than \$0.80. This is figured on a basis of an equipment valued at \$4,000 and including interest at 6 per cent., and depreciation 10 per cent.; also power for exhaust system."

Air pressure generated	92.5
Air pressure at blast, lb.	80
H. P. for air	53
Interest and depreciation	\$0.0307
Maintenance, air	\$0.105
Maintenance, sand	\$0.279
Power for exhaust fan .....	.0577
Nozzle .....	.0104
Total .....	.4828
Labor .....	.316
Total .....	.7988

An Example in Cleaning Brass Castings

Mr. Armstrong next described a modern sand blast installation as designed by the Thomas W. Pangborn Company, Hagerstown, Md., and including sand blast machine, sand separating machine, sand elevator, exhaust and dust arrester. He then turned attention to the sand blast in connection with tumbling barrels, and illustrated several machines and results obtained, among the latter being 360 lb. of brass castings. In explaining these last Mr. Armstrong said: "These were put into the barrel just as they came from the mold and the time was 15 min., which included the time to load, clean and unload the barrel. An average maintained on this run was 70 lb. and the abrasive used was No. 40 Angular grit, through 1/4-in nozzle. In a paper read by Prof. William T. Magruder, professor of mechanical engineering in the Ohio State University, at Columbus, Ohio, before the American Society of Mechanical Engineers at the annual meeting in 1911, he pointed out that as shown by tests conducted by him the greatest efficiency for sand blasting is obtained by having the nozzles at the right distance and correct angle for the work."

Sand Sifters and Other Appliances

The speaker then described briefly pneumatic sand sifters, especially those of the portable tripod and "post" or "wall" shaker types, quoted a manufacturer as to cost of operation, as follows:

Including the cost of air, based on an efficient compressor installation, and figuring generally at 3c. per hour for maintenance of sifter, compressor, pipe line, hose couplings, etc., and also including labor at 15c. per hour, the cost would be 27c. per hour. When you consider that one man with one machine will screen in one hour as much sand as a man would riddle by hand in one day, and basing his time at \$1.50 per day, you will see that you effect by the use of the machine a saving of \$1.23 in one hour.

The air torch, he said, had been found a great time and labor saver, being used for skin drying copes, molds, etc., heating ladles, lighting cupolas and repairing castings. He also described an air nozzle for blowing blacking on molds, cores, etc. This device is in the shape of a T, made of about 1/2 in. pipe, with discharge end bushed to about 1/4 in. The air is connected so as to cross the top of the T. A short section of hose is connected to the bottom or stem of the T, which goes to the receptacle holding the blacking. As the air is blown through the top of the T, it syphons the blacking and blows it in a spray over the work, reaching and covering every corner or crevice.

In conclusion Mr. Armstrong said that the examples of the use of compressed air he had referred to were in his opinion sufficient to demonstrate that a foundry not equipped with it cannot produce its output in commercial competition with foundries that have adopted the system.

Low Pressure Sand Blast Favored by Some

The only exception taken by members of the association in remarks that followed the paper was in regard to Mr. Armstrong's indirect advocacy of high pressures for sand blasting, though at least one member agreed with him

in the particular. It was remarked in criticism that the method seemed to be economical when so high a pressure was used, as the high compression cost more money than the low, and it was difficult to get sand blast sand that would retain its efficiency under such force and that the nozzles wore away speedily. James Flockhart, Maher & Flockhart, Newark, who occupied the chair at the meeting, said he had found 15 to 20 lb. pressure sufficient for his purposes. He also failed to see the economy of removing large cores by sand blast, saying he would rather do it outside the sand blast room by other methods, so avoiding the incidental "muss." A question as to how the health and labor authorities regarded some of the apparatus which had been described, asked by Franklin Phillips, Hewes & Phillips, Newark, was answered by Mr. Flockhart, who said that under a law recently passed in New Jersey, State agents were visiting foundries and directing the installation of apparatus to protect the workers from dust and sand-laden air.

A vote of thanks was given Mr. Armstrong and his paper was declared to be interesting and instructive. The usual dinner preceded the meeting, which was attended by 50 members and their guests.

New Giraud Chain Making Machine

A communication has been received from Andris Jochams, Brussels, Belgium, in which the statement is made that E. Giraud, Doulaincourt, France, has brought out automatic chain bending or forming and welding machines to manufacture automatically pulley blocks or any other kind of chains up to $\frac{3}{4}$ in. diameter of rod, at a cost which is claimed to be 50 per cent. cheaper than the process by which chain is ordinarily made in this country. It is claimed that the welding machine will weld electrically

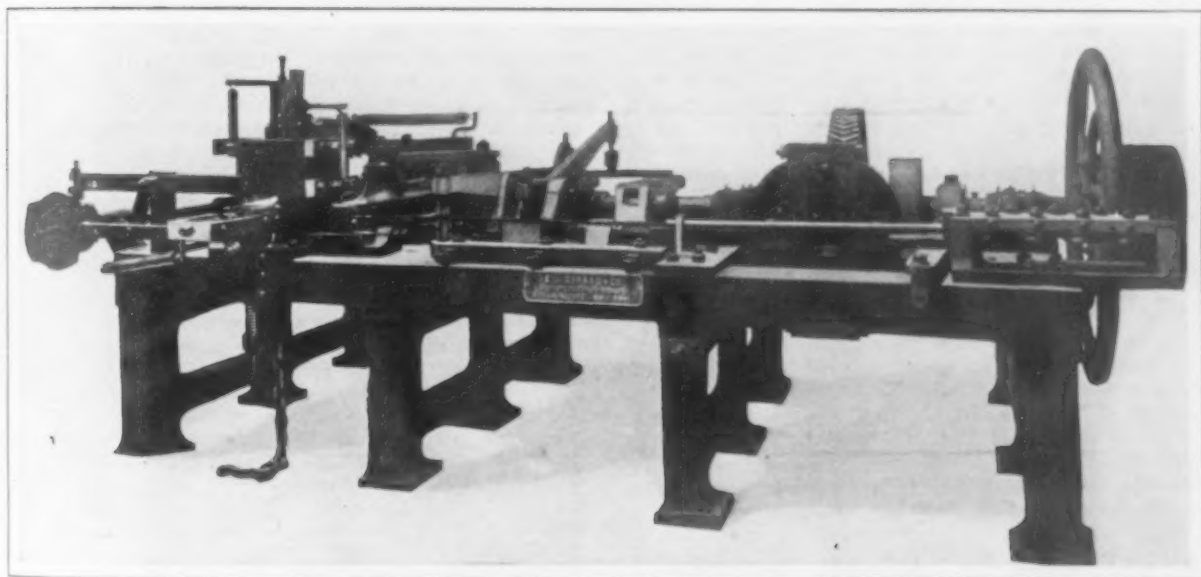
John D. Hibbard, Metal Trades Commissioner

Robert Wuest has tendered his resignation as commissioner of the National Metal Trades Association on account of poor health, and will be succeeded by John D. Hibbard of Chicago. Mr. Wuest's resignation will become effective in April, following the next annual convention. While Mr. Hibbard will not officially become commissioner until then, he has already commenced services with the association as acting commissioner with offices in the New England Building, Cleveland, Ohio, and between now and April will fully familiarize himself with the many details of the office and will make the acquaintance of the members of as many of the branches as possible.

Mr. Hibbard was formerly president of the John Davis Company, Chicago, and was for many years president of the former Chicago Metal Trades Association, during which time he had a great deal of experience combating strikes, having handled the machinists' strike in that city in 1904. Later this association became a branch of the National Metal Trades Association. He has a wide acquaintance among the members of the association, and the executive committee feels fortunate in securing his services as Mr. Wuest's successor.

Mr. Wuest has been suffering for some time from nervous trouble, and while his condition has improved he finds it necessary to lay aside all business cares for some time in order to recuperate. He left Cleveland January 12 for Florida, where he will spend several months.

The Missouri Waterway Commission authorized by the last Legislature, two years ago, has prepared a report to the new Legislature, soon to begin its session, recom-



Giraud Chain Forming Machine Built by the Electro-Mechanical Tool Company, Brussels, Belgium

chains also up to $\frac{3}{4}$ in. diameter of rod, with a consumption of electric energy stated to be at least 28 per cent. lower than with any other welder now known in this country. It is further stated that the French works using the Giraud machines now number thirteen, showing that the method is receiving wide recognition in that country. These machines are marketed by the Electro-Mechanical Tool Company, 93 Arbre Bénit, Brussels, Belgium.

Accompanying the communication are photographs of two machines, one the welding machine and the other, here reproduced, the chain bending machine. The welds of the links are made in the middle as contrasted with the end of the links. Details of the machine are at this writing meager, but the view will give an idea of the general character of the machine, which is built in five sizes. The smallest is rated to make 50 links per minute $1\frac{1}{16} \times 5\frac{5}{32}$ in., and $\frac{3}{4}$ in. diameter, and the largest 15 links $15\frac{15}{32} \times 5\frac{1}{2}$ in., $19\frac{1}{32}$ in. in diameter. The smallest machine occupies about $6\frac{1}{2} \times 4\frac{1}{2} \times 4\frac{1}{2}$ ft. and the largest $10 \times 8 \times 8$ ft. and the weights range from 3500 to 7700 lb.

mending the construction by the State of two dams in the Mississippi River below St. Louis, for the development of hydroelectric power and estimating the capacity of each at about 250,000 hp. The commission states that engineering examinations show that each dam could generate more power than that now approaching completion at Keokuk, Iowa.

Robert J. Sterrett, Philadelphia, Pa., made a most interesting and instructive address before the Associated Foundry Foremen of that city, at its regular monthly meeting on the evening of January 8, on "Workingmen's Accident Compensation." He explained the provisions of the bill which will come before the Pennsylvania Legislature at its present session and made comparisons with recently enacted laws in other States bearing on this subject. The meeting was largely attended, and considerable discussion followed the address.

Getting the Most Out of the Shop*

Illustrations of Efforts to Bring Machines to Maximum Capacity with the Resultant Effect on Overhead Charges and Profit

—BY STUART DEAN—

The actual output of the average cotton mill is from 80 to 90 per cent. of its theoretical capacity; that of the machine shop is seldom 30 per cent. With proper selection and training of the men, and with good management, a machine shop can attain the same efficiency as the cotton mill, or nearly three times its present capacity. To accomplish this, however, those in authority must plan the work, the fixtures and shape of cutting tools instead of leaving all these to the workman. Thirty per cent. sounds like a low figure. The following incident shows how nearly right it is.

Certain machines in a shop had a month's work ahead. One machine was using a feed of $1/32$ in. per revolution. The foreman ordered it increased to $1/16$ in. The workman, as soon as the foreman's back was turned, dropped the feed again to $1/32$ in. Continued pressure on the man brought the feed and speed up to the apparent limit of capacity of the machine.

The superintendent offered the machinist, who already was receiving high wages, an increase of $1\frac{1}{2}$ c. per hour. At the same time he told the man that he was going to watch him and ascertain if the shop was receiving an increase in output over the present rate equivalent to, or greater than, the increase in pay. The workman promptly rose to the occasion, and the noise made by the machine on the roughing cut could be heard all over the shop. But little time was lost in changing cutters and only a few minutes were needed to change cylinders. For finishing the ends of the cylinders two-bar facing attachments, one at each end, were used on the boring bar. The workman put a belt tightener on the cone belt to enable the machine to pull a heavy cut. The net result was nearly double the previous output which had been the apparent limit.

Another incident will bear out the statement made in the first paragraph. A number of 12-in. steam cylinders, $15\frac{1}{2}$ in. long with a $3/16$ -in. finish to be removed on each side on the roughing cut, and with $1/32$ in. to be removed on the finishing cut, were to be machined in a Draper-cylinder lathe about ten years old. The foreman decided to see just how quickly the job could be done. The machine was speeded to 14 r.p.m. A roughing cut of $1/8$ -in. feed per revolution was taken with a feed of $1/4$ in. for finishing. The machinist objected, saying that the belt would slip under such a cut and that the cylinder would spring so much under the roughing cut that the finishing cut would never true it up. Neither thing happened. The belt did not slip and the finishing cut trued the bore perfectly.

What Working a Machine to Capacity Accomplished

This incident shows that the average workman does not know the capacity of his machine. The machinist in this case really believed what he said. The roughing cut on this job required 11 minutes and the finishing cut 6 minutes. Fifteen minutes were necessary for removing the finished casting from the jig and putting in a rough one. One minute was spent in tool changing; a total of 33 minutes for the job. The best previous time for this operation was 95 minutes.

Let us analyze what this means to the firm. If the time on every operation in the plant could be cut in the same proportion, the time and labor cost could be cut 66 per cent. The firm, in the past, we will say, was making a 10 per cent. profit. Assume that the average finished machine cost was as follows:

Material in machine.....	\$82.00
Labor	20.00
Overhead and selling expense.....	51.00
Total cost on machines.....	\$153.00
Selling price	\$168.30
The cost	153.00
Profit, 10 per cent.....	\$15.30

*Copyright, 1913, by Stuart Dean. Twelfth article on Shop and Foundry Management. The eleventh article, "Making an Accurate Delivery Promise," was printed in the issue of January 2.

Now, cutting the above labor cost to 34 per cent. of what it had been, would change the cost to this:

Material, as before.....	\$82.00
Labor—34 per cent. of former cost.....	6.80
Overhead and selling expense—75 per cent. of former cost	38.25
	\$127.05
Selling price, as before.....	\$168.30
Cost	127.05
Profit	\$41.25

Instead of a profit of 10 per cent. on each machine shipped, the profit would be 32 per cent. More than that, the increased output per man and per machine would mean an increased yearly plant capacity of 294 per cent., with no increase in the equipment.

Suppose the sales were \$110,000 per year, with a cost of \$100,000, or a profit of 10 per cent. Now, with the increase in the output of 294 per cent., the sales would be \$323,400. At the new rate the cost would be \$245,000, leaving a profit of \$78,400, or 32 per cent.

As an actual fact, the showing would not be as great as this, for in order to triple the sales the selling price would be cut. This would reduce the profits. Another point that would reduce the profits would be an increase in the plant pay roll. Each productive workman, on account of the added strain on him from increased production, would have to be paid 20 to 30 per cent. more than in the past. This would affect only that portion of the force that were actually doing the work on the product. It would probably increase the pay roll 10 per cent.

Suppose these reductions brought the year's profits down to \$50,000 or \$60,000. Comparing this with their previous profit of \$10,000, it shows that a firm can make a comfortable fortune in 10 or 20 years if it will go to the limit in manufacturing and selling.

Changes Possible in Overhead Charges

The following changes in overhead expense would be made if the output were tripled with no increase in the equipment or the number of men who do actual work on the product. Before tripling, the assumption is that each \$100 of overhead expenses is divided as shown in the first column.

	Before	After
Office salaries	\$16.50	\$24.00
Traveling men's salaries and expenses	16.00	38.10
Advertising	5.50	14.45
Office supplies and catalogues.....	3.00	9.00
Factory heads' salaries.....	7.80	9.80
Pattern expense	8.30	16.60
Petty cash, freight, drayage, etc.....	9.50	27.00
Tool supplies, shop castings, etc.....	3.20	9.00
Work on machine tools and jigs.....	9.50	26.00
Roustabouts	6.20	17.50
Studs, bolts, paint and like supplies..	8.30	24.00
Engine room labor.....	3.00	3.25
Coal bill, belts, etc.....	3.20	6.30
	\$100.00	\$225.00

Where \$100 had been spent as overhead expense manufacturing a machine, \$225 would be spent on three of these machines as overhead expense, after the plant output had been tripled, with no increase in the equipment. The overhead expense on one would be \$75. Thus the overhead expense on any one machine, built after the increased output, would be only three-fourths of what it had been before.

The only increase in the office force would be in the circular letter-writing department, and possibly an extra person to answer the added correspondence. The increase in the cost-keeping and bookkeeping would be very little. A couple of low-priced girls could take care of it.

The traveling expenses would not be tripled, as certain economies could be practiced when selling on a large scale. The low-selling price would be a great stimulus to the sales department. The advertising field could be fairly well covered without tripling the advertising. The

office soliciting and catalogue expense would be tripled, as letter soliciting would be pushed to the limit. The number of factory heads would not increase. Their salaries would be a little higher.

Pattern expense would not increase in proportion to the increased output, as the increase would probably come on the more standard lines of work, which would require no pattern work. The tool supplies, shop castings, etc., would not triple, nor would the tool work be tripled. Roundabout would not increase three times.

Studs, bolts, nuts, paint and like supplies would not triple in cost, as on account of buying in larger quantities lower prices would be paid. Some supplies that previously had been bought would be manufactured.

Engine-room labor would increase little, if any. The coal bill would increase very little. There would be no more power used to overcome the dead-load friction (shafting, countershafts, loose pulleys, etc.) than before. There would be no increase in the coal for heating.

The Ideal Condition in the Machine Shop

There are certain ideal conditions that every machine shop should strive to attain. These are: (1) all machine tools should cut to the limit of the power of the tool steel; (2) the chucking fixtures should be so designed that the chucking time on machines is reduced to a minimum. The West Albany Shops of the New York Central & Hudson River Railroad furnished a fine example of the attainment of these ideal conditions. The information was obtained from the Niles-Bement-Pond Co.

The job was the turning of 36-in. Krupp & Paige wheels in a Pond lathe. During a continuous run from 7:00 a. m. to 5:35 p. m., with one hour out at noon, 33 pairs of wheels were turned. The details of the performance are shown in the table below:

Average time putting wheels into lathe.....	2 min. 28 sec.
Average time roughing.....	9 " 23 "
Average time finishing.....	5 " 17 "
Time required for removal.....	1 " "
Total average time on one pair of wheels.....	17 " 58 "
Average depth of cut.....	3/16 in.
Average cutting speed.....	14.4 ft. per min.
Cubic inches of steel removed per minute average.....	13.1
Minimum time putting wheels in lathe.....	1 min.
Maximum time putting wheels in lathe.....	4 " "
Minimum roughing time.....	7 " "
Maximum roughing time.....	12 " "
Minimum finishing time.....	3 " "
Maximum finishing time.....	7 " "
Minimum time on one pair of wheels.....	14 " "
Maximum time on one pair of wheels.....	21 " "

These ideal records were obtained after fitting the lathe with a pneumatic tool-clamping holder, power movement of the heads on the lathe bed, pneumatic clamping of the heads to the beds, by having the segment in central driving gear open, close and lock automatically when wheels were rolled in and out,—no attention being required by the operator. These devices reduced the idle time of the lathe to 3 min. 28 sec., or 11 per cent. of the total time.

By having a machine powerful enough to cut to the limit of the tool steel, by removing the finished work promptly from the vicinity of the machine, and by having raw material at hand for the lathe so that no time was lost waiting for it, an output of 30 pairs of tires per day of 10 hr. was secured day after day. The machine in question was driven by a 40-hp. motor, which is equal to

one-half the power used at the tool points in the average machine shop employing 250 men.

Manufacturing Losses that Never Show

A firm must get its manufacturing costs low enough to be able to sell a little under the market and still make profit. It must be a good, safe profit, as there are manufacturing losses that never show on the cost cards. The actual cost of a finished machine is higher than that given by the cost cards. This fact will be noticed at the end of the year. Some of these losses are: The scrapping of rough or finished parts on account of a change in the design; change in the market that makes a certain class of machinery, or parts of machines, obsolete. These parts may be retained, but the loss is there just the same. Money has been spent for something that will never bring a return.

To select the best method of machining a piece analyze and time the different steps taken. For instance, the number of seconds required to chuck the piece; the number of seconds to put in the roughing cutter; the number of seconds required for the roughing cut; the number of seconds necessary to change cutters; the number of seconds required for the finishing cut; the number of seconds required for taking out finishing cutter; the time necessary for taking the piece out of the machine, etc. Having this information concerning several methods, one can easily decide what is the best method of doing the work or devise a new method better than any of the old ones. The method having the least idle time will be the best.

Avoid as much as possible the use of special machine tools. Use the method that will allow a small number of jigs and fixtures to cover all sizes of pieces. Select that method which will enable the operator to be setting up one piece while the machine is cutting on another piece.

Determining on Best Method of Operation

A good method of investigation is to take the most popular size of machine that you build. Get out the rough stock complete for two machines. Start machining these a piece at a time. Note in writing every operation and every step in each operation down to the minutest detail, together with the time required for each. Do the same in the assembling and the erecting. Surprisingly bad methods will be discovered, the correction of which will cut the cost and increase the plant capacity.

The statistical information thus acquired will always be useful in checking the time and cost sent in by the men on similar operations or in deciding whether or not a change in design will decrease the cost. It will tell whether or not the making of a jig or fixture will pay, or whether a new machine tool will improve the output, and how much it will improve it. The spending of money for improvements then will be a safe proposition. It will be known that the money will come back. To know is better than to guess, or to take the guessing of others.

These notes may be used as a basis for putting the operating time, speeds and feeds, etc., upon the drawings in the forms shown in Table I.

These instruction sheets should be pasted on the drawings. They give, in the minutest detail, not only each step in each operation, but the jigs, tools and fixtures, speeds, feeds and depths of cut, the time required for and the

Table I—Information Tabulated in Studying a Given Machine's Production

Setting number	Operation number	Operation	Surface machined	Depth of cut, in.	Feed per revolution	Rev. per minute	Minutes each operation	Minutes actually required
1	1	Chuck					1/2	1/2
	2	Rough turn	A	1/8	0.111	8	3	3
		Rough face	B	1/8	0.111	8	1 1/2	1 1/2
		Rough face	C	1/8	0.111	8	1 1/2	1 1/2
	3	Finish turn	A	0.005	0.333	8	1 1/2	1 1/2
		Finish face	B	0.005	0.333	8	3/4	3/4
		Finish face	C	0.005	0.333	8	3/4	3/4
	4	Rough bore	D	5/16	0.111	45	2	2
		Round edges				8	3/4	3/4
	5	Truing cut	D	1/64	0.056	53	1	1
	6	Ream	D	0.005	0.216	30.7	1/4	1/4
	7	Remove					1/4	1/4
2	1	Chuck					1/2	1/2
	2	Rough face	E	1/8	0.111	8	1 1/2	1 1/2
		Rough face	F	1/8	0.111	8	1	1
	3	Finish face	E	1/64	0.333	8	1/2	1/2
	4	Round edges	F	1/64	0.333	8	1/2	1/2
	5	Round edges					3/4	3/4
	6	Remove					1/4	1/4
		Total time (individual operations).....					19 1/4	
		Actual time						13

sequence of operations. The jigs and tools will be numbered and referred to by number.

Many jigs are made at great expense and never used a second time because they are forgotten. This is especially true where the jig is made to save time on some minor operation. The system of having a complete instruction card on each drawing will eliminate this wasteful condition. Pasting the instructions on the drawing will allow changes to be made in this sheet without making a new drawing each time. This system will allow the chief of the producing end to be a hustler rather than a fine mechanic or engineer.

New Open Hearth Furnace Features

Advantages of the Divided Hearth and of Round Furnace Doors

The question of using open hearth furnaces with divided hearths is not a new one, but a description by R. Dietrich, of Bochum, Germany, in *Stahl und Eisen* is of great interest. He has used such a furnace at his plant at Bochum with extremely good results for about a year. The furnace was originally of the ordinary type with a hearth about 29 ft. 6 in. long. This hearth is divided transversely into two equal parts by a bridge made of the same material as the hearth lining. It is about 12 in. wide at the top and 47 in. at the bottom, sloping down towards both sides with a trough-like shape. Each division is provided with its own tapping hole and spout. The height of the bridge depends on the kind of flame, but it must never be so high that it interrupts the flame and deflects it towards the roof, or else the latter will be quickly destroyed. Experience soon teaches how high it must be, and it can easily be altered while running.

No special operating difficulties are brought about. With care the hearth and bridge stand up remarkably well. The two sections are charged alternately, one as quickly as possible after the other. It is not, however, necessary that the two heats be tapped together or one quickly after the other, but it is recommended that the tapping times be as close together as possible. The charging of one section should not wait, however, until the other is empty, but a beginning should be made as soon as possible even if they are taking tests in the latter. If the heat on one side lags much behind the other it can be regulated under certain conditions by charging a smaller heat.

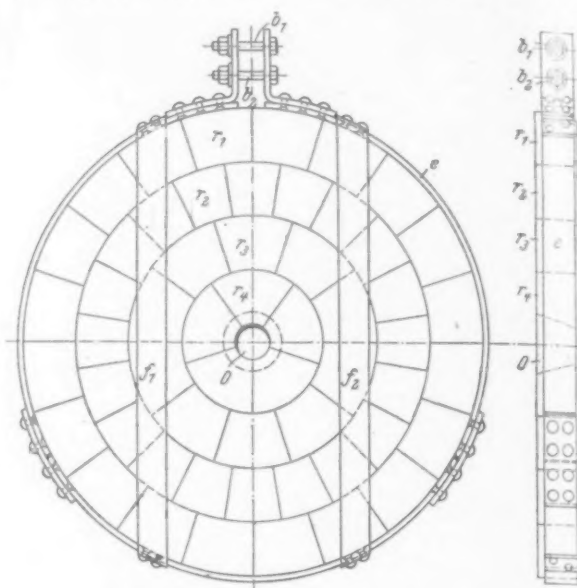
With good practice such a furnace should give eight heats in 24 hr., with a charge of about 18 tons, provided very high grades of steel have not to be made. Any furnace with a hearth at least 26 ft. long can be changed to a double hearth furnace, if three tap holes have been provided previously. The middle tap hole is properly closed with magnesite and the bridge built. The whole operation only takes about 36 hr.

The success of Herr Dietrich with this arrangement has led him to devise and patent a double hearth furnace the bridge of which is provided with a channel. This melting channel running the length of the bridge has its own tapping hole and spout. Such an arrangement, he believes, should have several uses. It can be applied to the melting of additions for the heats, or for the production of small experimental heats, particularly of high grade steels. For instance, it should be possible to produce steels fully equal to crucible steels in quality, for the channel is deep and is protected by its sides from the direct action of the flame. If the channel is made narrow it should be possible to cover it, and then the conditions will be the same as those of crucible melting. Further, additions can be made at any time and tests taken. Another advantage of such a channel is that by means of it slag can readily be drawn off from the heats at either side.

Round Furnace Doors

Herr Dietrich also describes briefly the round furnace doors, which he has designed and patented. An example is shown in the illustration. The riveted band of mild steel, c , holds the bricks together. It is fastened by two bolts, b and b_2 , from the upper of which the door is hung. The lower one serves to adjust the tension. The bricks of radial shape are arranged in rings r_1, r_2 , etc. The num-

ber of rings depends on the size of the door, and a small opening, o , is left in the center. With large doors the steel strips f_1 and f_2 are used to assist in holding the bricks



Round Open Hearth Furnace Doors

in place. The advantage of such round or elliptical doors lies in their simplicity and cheapness, and also in the ease of repairing and the comparatively small number of bricks required. As is well known, large doors burn very quickly in the middle and the whole brick work becomes useless, even that only partially burnt. With these special doors only the inner one or two rings must be replaced. The capability of tightening or loosening the band also allows good firebrick or silica brick to be used.

In reply to a short discussion on his paper Herr Dietrich said that the channel in the bridge had not been used, and that the divided hearth furnace is only advisable in the case of the production of better grades of steel. It is not recommended for the ordinary commercial steels, where the single hearth furnace with its larger output works more cheaply.

G. B. W.

Latin-American Machine Tool Market

The Bureau of Foreign and Domestic Commerce, Washington, D. C., announces that a series of consular reports on the markets for American-made machine tools in Latin America will be issued in the near future. Lists of firms and individuals who sell and use machine tools in the various countries are a valuable feature, and considerable attention is given the sales methods, credit terms, etc. The Latin-American countries are largely agricultural, and the demand for machine tools has consequently been limited, but there is an increasing use of machinery of this sort in some localities, especially in connection with railroad repair shops.

The same bureau is also about to issue a monograph dealing with the manufacture of electrical instruments and meters in Europe by H. B. Brooks, commercial agent of the Department of Commerce and Labor, who recently inspected 31 of the most important electrical works of England, France, Germany and Italy.

The Browning Engineering Company, Cleveland, Ohio, reports the recent receipt of the following crane orders: Standard crane, Girard Iron Company; one portal and one standard crane, Cambria Steel Company; magnet crane, Halcomb Steel Company; two standard cranes, Inland Steel Company; magnet crane, Cleveland-Cliffs Iron Company; electrically operated crane for a coal handling plant, Busk & Daniels, Philippine Islands; electric crane, Norfolk Sand & Gravel Company, Norfolk, Va.; standard crane, South Buffalo Railway Company, Buffalo, N. Y.; standard crane, Great Lakes Dredge & Dock Company, Indiana Harbor, Ind.; 75-ton bridge crane, New York Central Railroad.

Tariff Hearings at Washington

Representatives of Numerous Great Industries Crowd Their Statements and Arguments Into Two Days

WASHINGTON, D. C., January 14.—The Ways and Means Committee on January 10 began its hearings on the metal schedule, Schedule C of the tariff act, and they were continued on the 11th, both days being given completely over to this schedule. While Chairman Underwood and the Democratic members of the committee have announced that the committee had practically decided to report a bill revising the metal schedule practically identical with the bill reported at the last session of Congress, nevertheless the committee's hearing awakened the liveliest interest among manufacturers and producers in the iron and steel trade, and there was placed in the record by oral testimony and by briefs a considerable amount of matter for the committee to digest.

The bill reported by the committee at the last session, according to the report on it, made a reduction of 35 per cent. on the average duties of the entire metal schedule. It was estimated that the annual imports under the bill would net a revenue of \$17,477,640, as against a revenue of \$18,819,349 under the Payne-Aldrich act in 1911. The bill in addition placed iron ore, including manganiferous iron ore, on the free list, and also barbed wire, nails, horse-shoes, etc. Pig iron, at present dutiable at \$2.50 per ton, was assessed at 8 per cent. ad valorem. Bar iron, dutiable at present at 3/10 of a cent per lb., was changed to 10 per cent. ad valorem.

Importers Ask for Lower Duties

With few exceptions, the witnesses who testified before the committee last week advocated the retention of present duties. Some importers advocated lower duties or changes in classification.

A brief filed on behalf of the Cutlery Importers' Association advocated a change in the duties of the present tariff act on pen-knives, pocket-knives, razors, scissors and shears, by eliminating all classifications in values, completely abolishing specific duties, and establishing a uniform ad valorem duty of 50 per cent. for knives and razors. The brief stated that from knowledge in the possession of the association it felt convinced that a duty of 50 per cent. ad valorem on knives and razors would afford ample protection to the domestic manufacturer, and a duty of 35 per cent. on scissors and shears likewise. The brief set forth that members of the association could cite numerous cases where identically the same knife or shears is being made cheaper here than abroad irrespective of any duties. On table knives the association recommends the abolishing of specific duties and establishing a uniform ad valorem duty of 35 per cent.

H. A. Curtiss, representing cutlery manufacturers at Franklinville, N. Y., and Meriden, Conn., said in part: "Inasmuch as the larger portion of table cutlery cost is represented by the labor therein and the factory expense, it is evident from the facts and figures which I have produced that a further decrease in the tariff rate can only result either in a serious reduction in wages paid or withdrawal from the business by the American manufacturers. We respectfully ask that the present rates on table cutlery remain unchanged."

Screw and File Makers Present Statements

On behalf of the Rogers Screw Company, Providence, R. I., a brief was filed in which it was stated that the capacity for production of wood screws in this country at present is at least 50 per cent. greater than the normal consumption, and that domestic net prices are considerably less here than in England, in which country a substantial monopoly is enjoyed by one or two manufacturers. The brief continues:

The raw material (wire) is taxed 20 per cent. while the finished product (screws) bears an ad valorem duty of 25 per cent., or a net protection of less than 20 per cent. on screws, which is insufficient and is less than the difference in labor cost between this country and Germany, our keenest competitors. Why should the screw makers

be discriminated against by not having free raw material? The cotton and silk manufacturers expect it; and if the raw material of the screw makers is to be subject to a duty, then in all fairness a compensatory duty should be allowed them of at least 40 per cent.

William G. Smythe, representing the American Screw Company, which he said is the largest and the longest established maker of wood screws in the United States, protested against a reduction in the rates on wood screws and against a change from the present form of duty. He said, however, that if the committee feels that further reduction should be made he would recommend that the duty remain specific and that it be proportioned to the several classes substantially as follows: More than 2 in. in length, 2 3/4c. per lb.; over 1 in. and not more than 2 in. in length, 4 1/2c. per lb.; over 1/2 in. and not more than 1 in. in length, 7c. per lb.; 1/2 in. and less in length, 9c. per lb.

Wallace L. Pond, representing the Nicholson File Company, Providence, R. I., requested a continuation of the present rates on files. He said, in part: "There are in the United States some 25 to 30 makers of machine-cut files, employing about 6000 hands, besides from 30 to 40 smaller concerns scattered throughout the country. There exists between the file makers of this country actual and active competition of the keenest kind. The manufacture of files is a complex process and one which can be undertaken successfully only by workmen long skilled in the industry. The making of files is not in any sense of the word an automatic process. While machinery is used to perform the principal operations, each machine requires one, and in many cases two, attendants, and in the great majority of cases the operation includes only one file at a time. No less than 6000 varieties of files are regularly made by this company. Every one of these files is a fine-edged tool, and after passing the cut stage is a very delicate tool and easily ruined or damaged if not handled with the utmost care. The net market price of files has gradually and continuously declined for many years past, notwithstanding the fact that the manufacturing cost has greatly increased. In the manufacture of files the percentage of labor cost is very high, in many kinds as high as 80 to 90 per cent. of the total cost."

E. P. Reichhelm, president American Swiss File & Tool Company, Elizabeth, N. J., asked that high grade files or files of precision should be separately classified, regardless of what duty Congress may propose to levy upon files and rasps generally; that, in case the duties on files are to suffer a reduction of 20 per cent., files of precision should be exempted from such reduction, in order that not only the lower but also the highest grades and kinds of files may be made in America. This is to maintain the present fair competition in price with the importers, which since 1907 has benefited the consumer by the improvement in quality as well as a reduction in the price of such files of precision.

Henry D. Sharpe Speaks for Machine Tools

Henry D. Sharpe, Brown & Sharpe Mfg. Company, representing the American machine tool manufacturers, said that he spoke for not only himself but for 149 manufacturers. He said these manufacturers were on the defensive because, reviewing the steel bill of last session, the duty was not merely reduced but it was entirely removed. He urged that the present rate of 30 per cent. be not lowered, and that in any event machine tools should return to the general clause, "articles or wares not specially provided for," for the reason "that the general clause embraces the great bulk of metal working and engineering enterprises including a wide variety of machinery and metal product competing with us directly for the same class of labor; that is, machinists, pattern-makers and molders, and the same class of materials, principally pig iron and steel." Continuing, Mr. Sharpe said:

"The American machine-tool manufacturers do not fear any competition of an ordinary sort. We do fear competition where the duty is removed as proposed. The German manufacturer is rubbing his hands with delight at the prospect of removal of the duty. Why shouldn't he? He has shops organized on the basis of the American shop, the practice of manufacturing on the American plan of interchangeability of parts, the practice of specialization on the American plan, indefatigable managers apt at administration and keen to copy our best designs, workmen grade for grade as intelligent and constant as our own, and, last, a wage rate 50 to 60 per cent. of our own. Any American machine-tool man who goes abroad will testify to what I say here.

"The German has one thing more—he has a direct aid in export trade in the shape of special freights. The only way in which he is handicapped at present is his restriction of volume of production, and the removal of our duty would remove this for him, making him a worse competitor in the markets where we now find him.

"I would call your attention briefly to the fact that the machine-tool trade is not in any conceivable sense a monopoly. It is widely dispensed. Machine tools are not necessities of life. On the contrary, they are fundamental to our prosperity. Foreign competition has already begun with the duty of 30 per cent., and every additional per cent. reduction means more competition. Foreign costs are probably 30 to 40 per cent. lower on mining machines, etc.

"And, finally, all countries except England have tariffs against us. Let me repeat again, let us not be penalized to the extent of a discrimination vastly more than American engineering in general itself is penalized. In order to avoid any such discrimination, we suggest that machine tools be returned to the general clause, 'articles or wares not specially provided for.'

Want Sand Blast Machines Free

B. A. Levett, representing the Wiener Machinery Company, asked for the free entry of sand blast machines, because he said they are designed for the protection of American workmen, and are not made in this country. He said that at present there are only 15 concerns in this country out of 11,000 that are using this machine, and that it prevents the development of consumption, asthma, and other diseases incident to breathing in particles of sand, steel grit, etc., under methods now used.

Foreign Machinery Interests Oppose Reduction in Duty

Robert Homans, representing Richards, Atkinson & Haserick, Boston, importers of foreign machinery, stated that he objected to a reduction of duty and said with reference to his machinery that there was essentially a situation where no benefit was gained by a decrease in duty, but that the increase in imports necessary to produce the same revenue is offset directly by a loss of wages to American workmen.

Robert F. Herrick, Boston, Mass., representing the principal manufacturers of textile machinery in the United States, said: "We have shown that this is an industry in which other countries not only can, but do, compete in spite of the present duty and manage to do about one-third of the business; that our cost of labor is over twice the English cost, and that therefore the present duty of 45 per cent. upon the English cost is not excessive; that a reduction of 25 per cent. would either mean a corresponding loss in revenue of nearly \$1,500,000 or would necessitate an increase of 80 per cent. in importations to equal present revenue, and thereby give to our foreign competitors practically 60 per cent. of the entire business; that this means to us shutting down or reducing wages, one or the other; that the benefit to the cotton mills by a reduction in our duty is negligible and not even asked for; that no gain in revenue would result therefrom. Consequently nothing but harm would be done, and no possible advantage would be gained in return for crippling or ruining a substantial and long-established business. We ask, therefore, that the rate of duty on textile machinery be maintained at the present figure of 45 per cent."

Hardware Manufacturers Advocate Gradual Reduction

Henry R. Towne, representing the Yale & Towne Mfg. Company, Stamford, Conn., and other American hardware corporations, said in part:

"The group which I am speaking for is one of the metal industries. As near as we can estimate, the amount of capital invested in that group, making locks and all kinds of builders' hardware, is about \$30,000,000, and the number of employees probably about 15,000. There is no trust, no monopoly, and no control by patents. The industry is absolutely and intensely competitive. It is divided into six or eight distinct groups, according to the nature of the product and the manner in which the product is used. For example, builders' hardware and locks which go into the construction of businesses of all kinds; cabinet locks which go into the furniture trade; trunk locks which go into the trunk trade; bank locks which go into the bank and safe-builders' trade; padlocks and numerous minor items entering into the general business of the retail hardware trade of the country. It is a very diversified industry not only in its distribution but still more in the vast variety of metal products which it embraces.

"Our committee comes here authorized to speak for the large majority of the industries, and believing that we speak with the sympathy and approval of all we ask chiefly that the reduction, which we expect and believe we can tolerate if it is reasonable, shall not be excessive; and, second, if the nature of the legislation which Congress shall see fit to pass in this matter permits of it, that the application of the reduction shall be gradual and not sudden, in order that the industry may adjust itself to the new condition without shock or permanent disturbance. For that purpose we suggest that the present rate of 45 per cent. on these products shall be reduced first to 40 per cent. and ultimately to 35, and that these reductions be distributed and not be made at one time."

President Donner, of Cambria Steel Company, Pleads

W. H. Donner, president Cambria Steel Company, filed a statement, in the course of which he said:

"I believe that the tariff should be revised, but, with the present popular antagonism against the United States Steel Corporation, I feel that the whole steel industry is in danger unless the matter is conservatively and intelligently considered, and I trust you will appreciate that it is only owing to the unusual active business conditions abroad that we are having no serious competition or importation to-day, but you, as business men, know that foreign manufacturers of steel will have their periods of depression, when they will actively seek our markets.

"A most remarkable condition exists in the steel trade to-day. Business on the other side is booming, and the prices of finished steel for the moment are as high abroad as in America. Our experience teaches us that this is of course only a temporary condition. The iron and steel industry is subject to violent fluctuations in times of prosperity and depression probably more so than in any other line of business, and we have no doubt but that your honorable committee will recognize these facts in considering a revision of the tariff at this time. With the rapid increase in the consumption of steel the rich ores have been largely mined, and we are gradually using leaner ores, which means increased costs. Furthermore, the value of ore, coke, and coal has so appreciated that the margins are not now as remunerative as in many other lines of manufacture; and, in fact, the steel business is not as profitable here at the present time as in the leading steel-producing countries of Europe. It should be remembered that in the published reports of the United States Steel Corporation are included the earnings of its railroads and steamboats, which should be considered separately from the profits on steel, as they are not a part of the steel industry.

"Foreign manufacturers build their works at a less cost and can earn larger profits on their capital than we can, all because of cheaper labor. European manufacturers export approximately one-half of their product, while American manufacturers export only about one-tenth of their production. In periods of depression, which are certain to come, foreign manufacturers will dump large tonnages on our Atlantic, Gulf and Pacific seaboard cities at cost, in order to maintain their organizations and help pay fixed charges. Such an invasion would mean a loss to American capital, idleness for thousands of American workmen, and a curtailment of further expansion of the American steel industry."

Tin Plate Manufacturers Willing to Take Reasonable Reduction

E. J. Crawford, president McKeesport Tin Plate Company, said that he represented 15 independent manufacturers of tin plate, with mills located in different parts of the country, mainly in Pennsylvania, Ohio, West Virginia and Illinois. He said: "We are going to recommend that a reduction can be made in the present rate of an amount not exceeding 30 per cent. This amount deducted from the present rate of \$1.20 will leave the recommended new duty 85c. per 100 lb."

He said, in the course of his argument, that if the tariff was cut so that foreign competitors of the United States Steel Corporation were let in he feared that the corporation would retaliate by adjusting things so as to crush foreign competition, and that the independents here would go down with the foreigners. "The United States Steel Corporation," he added, "simply suffers us to do business. It is strong enough to put us out of business in less than a week if it cared to."

Representative Palmer (Dem.) of Pennsylvania, asked Mr. Crawford if he thought there was any danger in the present state of public mind of the corporation driving the independents out of business. The reply was that a tariff reduction in favor of foreign competitors might give the corporation "an excuse" to drive out competition, and that he wanted the tariff to keep that excuse away from the corporation. He believed that the Steel Corporation could defend its position absolutely even if the tariff was wiped out; that it felt absolutely secure and "can take care of itself from legislation, no matter what may arise."

Crucible Steel Duty Defended

John A. Mathews, general manager Halcomb Steel Company, said in part: "The crucible steel industry is not now, and never has been, as well protected as has been the cheap or tonnage steel trade. Taking an import price of 4c. per lb. as the dividing line between the two trades, we find from custom house records that steels valued below 4c. per lb. are subject to from 30 to 35 per cent. duty, while steels valued at over 4c. per lb. are subject to only 20 per cent. That this is unfair to the crucible steel industry we think you will admit from a consideration of the fact that the proportion of labor to raw materials is from three to five times as great in manufacturing crucible steel as it is in manufacturing open-hearth or Bessemer steel. This, however, does not tell the whole story, for the raw materials are not the same in the two cases. From the investigations of the Commissioner of Corporations we learn that in making 1 ton of pig iron less than \$1 goes to labor; in a ton of rails \$1.25 goes to labor; in structural steel \$2.15, and in merchant bars \$3.06; while in crucible steel no less than \$50 per ton goes to labor as a conservative figure, exclusive of selling and administrative salaries."

Pig Iron Manufacturers Protest

Joseph G. Butler, Jr., Youngstown, Ohio, on behalf of independent manufacturers of pig iron, said in part: "It is the duty of lawmakers to provide revenue for the Government. The Ways and Means Committee has the initial step. I contend that the Payne-Aldrich bill, so far as Schedule C is concerned, more especially having in mind our particular product, is a revenue producer, and the rates therein named should not be disturbed. I respectfully protest against any further reduction, and if the committee desires further and specific information from any or all of our furnaces, I will gladly furnish it."

W. S. Pilling, representing Pilling & Crane, Philadelphia, Pa., and others, made a statement, from which the following is taken: "The duty on pig iron has been radically reduced in the past few years, the last reduction being 37½ per cent., when the tariff was reduced from \$4 to \$2.50. It is earnestly to be hoped that under the pending bill the rate will be fixed at not less than \$1.50 per ton. It should be borne in mind that the duty on scrap, which frequently replaces pig iron, was reduced from \$4 to \$1 per ton by the last tariff bill."

Wire Products, Tubes and Hoops Represented

The Keystone Steel & Wire Company, Peoria, Ill., filed a brief, in part as follows: "We do not favor any change in the tariff on steel commodities from an approximately

specific rate to a purely ad valorem basis. The former basis has been justified under our law and experience in the administration of tariff laws; while on a purely ad valorem basis you will open the way to fraudulent undervaluations on the part of dishonest importers and will cause great embarrassment and annoyance to honest manufacturers when fluctuations in market values occur. We respectfully submit that, to enact a law placing wire fence fabrics, barbed wire, wire nails, wire staples, etc., on a free list and to place an ad valorem duty of from 10 to 20 per cent. on the raw material from which the above articles are manufactured is unfair and unjust, not only to ourselves, but to other and similar manufacturers throughout the United States and particularly in the central West, and, instead of accruing to the benefit of the farmer, will react on the large number of workingmen engaged in this line of manufacture; and we respectfully suggest that, if the present tariff be disturbed, conditions in our particular line of industry be impartially and scientifically investigated before making any reductions whatever, in order that an equitable adjustment may be made."

The Parkesburg Iron Company, Parkesburg, Pa., in a statement filed requested that no material reduction be made on charcoal iron boiler tubes.

Severn P. Ker, president Sharon Steel Hoop Company, Sharon, Pa., said: "I am in favor of a revision of the tariff, but only as a result of careful study of its various schedules by a non-partisan board of investigators."

Present Duty on Ball Bearings Urged

On behalf of the Standard Roller Bearing Company, Philadelphia; Hyatt Roller Bearing Company, Newark, N. J.; New Departure Mfg. Company, Bristol, Conn.; Gurney Ball Bearing Company and other anti-friction bearing manufacturers of the United States, Joseph Auerbach asked that the present duty on anti-friction balls, ball-bearings and roller-bearings be maintained. The duty on these articles is 45 per cent. ad valorem, and under the schedule of the committee it is proposed to reduce the rate to 25 per cent. Mr. Auerbach summarized the situation with reference to this industry, stating that there are no trusts or combinations controlling selling prices or limiting production; there are no fundamental patents; the present duty has not operated to eliminate effective competition, for the imports have gradually increased and are now larger than at any previous time; American labor costs are two to two and one-half times those of the foreign competitor; the entire present duty goes to American labor; these products are used in automobiles, a reduction in cost of which would not affect the consumer.

Protective Duties Urged on Zinc and Lead

Otto Ruhl, on behalf of the Zinc Mining Association of the United States, asked the committee to retain the present duty, and based his request on the following reasons:

"1. The present duty has been a revenue producer. It has yielded a total revenue of \$759,284.83, or an approximate average annual revenue of \$250,000.

"2. The present duty is not restrictive. The average annual importation of zinc ores since the duty has been imposed has been greater than the average annual importation for the five years immediately prior to the imposition of the duty.

"3. There is not even a suspicion of monopoly in the zinc mining business.

"4. The wages in the zinc mining business are high. There is no foreign or cheap labor in this industry.

"5. Of the total cost of zinc ready for the consumer 66 to 70 per cent. is expended in the mining and concentration of the ores. Over one-half of the mining and concentrating cost is paid to labor.

"6. Owing to the difference in wages, the cost of producing zinc ore in the United States is higher than that of producing zinc ore in Mexico. For this reason, from the standpoint of incidental protection, we feel that the zinc industry is entitled to consideration in the formation of a revenue tariff."

George W. Cook, Denver, Col., appeared as a representative of the owners, shippers and leasing companies of all the zinc and lead mines in Colorado. He declared that the placing of zinc and lead ores on the free list would close hundreds of producing mines and concentration mills throughout 22 States.

Chairman Topping on the Iron and Steel Tariff

A Strong Argument Against the Underwood Bill—Steel Manufacturers Are Asked to Permit Imports for Revenue Purposes

WASHINGTON, D. C., January 13.—John A. Topping, New York, chairman Republic Iron & Steel Company, was given perhaps the most time of any witness in the tariff hearings of January 10 and 11, and he had the unreserved attention of all the members of the Ways and Means Committee from the time he took the stand until he had finished. He candidly criticized the proposed bill of the committee and gave reasons at length for his opinions. He said that President-elect Wilson was reported to favor the idea that "wisdom is in much counsel" and added that he was glad to observe that this sentiment seemed in accord with the general views of the committee. After Mr. Topping had given his testimony he placed in the record for the committee's consideration a voluminous brief, outlining at length the business done by the company he represented and in connection with the iron and steel business in general.

"In the discussion of the general question of tariff revision," said Mr. Topping, "I have assumed that it is desirable to shape legislation so that business disturbances will be minimized, that business enterprise will be stimulated rather than discouraged; that your purpose in revising the tariff is to maintain revenue and to distribute the burdens of taxation in a manner which you believe will be equitable—not discriminatory and sectional—and thus secure equal opportunity to all and broaden business opportunity generally.

No Industry Should Profit at the Expense of Another

"Business men, as a rule, recognize the principle that if industry as a whole is to prosper, no branch of it should profit at the expense of another, and that the burden of taxation should be fairly and equitably distributed. In my discussion of revision of the tariff I have assumed that the Underwood bill, as adopted and passed by the Sixty-second Congress, is to be accepted as a suggestion of the policy which you will advocate for adoption, and I shall, therefore, address myself to Schedule C of H. R. 18642 of the Sixty-second Congress and endeavor to point out the objectionable features of that bill, viewed from a non-partisan or business standpoint. I say non-partisan because I represent stockholders and labor of various political faiths who oppose the adoption of Metal Schedule C of the Underwood bill of the Sixty-second Congress, more particularly on account of the indirect injury which would result to us, rather than the direct injury. Most all of our products are at least nominally protected, but the buyers of our iron ore, pig iron, billets and sheet bars, who are producers of the finished product, cotton ties, hoops, bands, wire nails, spikes, horseshoes, etc., would be injured by placing these items on the free list.

Against Ad Valorem Rates

"My objections to the Underwood bill are general and apply to all items in the following paragraphs, under the dutiable list: paragraphs Nos. 1, 2, 3, 4, 6, 7, 8, 9, 12, 13, 14, 15, 16, 21 and 25, and to the free list paragraphs Nos. 67, 68, 69 and 70 of H. R. 18642 of the Sixty-second Congress, for the following general reasons:

"That as a revenue bill the ad valorem principle of taxation would be disturbing to business; would stimulate underbidding, cause the tax rate to fluctuate with the market rates abroad for commodities, the tax rate being least when the market is most depressed and when labor and capital need maximum protection; the tax rate being burdensome or highest when the market is strong or when the consumer needs protection against unreasonable prices.

"Under conditions stated, revenue volume would necessarily fluctuate with market values; the commodity markets would be made less stable, Government revenues less secure and further impaired by additions to the free list of items of a revenue-producing character, and also adversely affected by the general reduction in tax rates.

This view of the revenue feature of the bill would at least seem to be supported by the history of the custom receipts for the following periods:

McKinley bill, 1891-1893.....	\$21,507,930-\$27,248,271
Gorman-Wilson bill, 1894-1895.....	17,791,784- 14,929,338
Dingley bill, 1906-1907.....	14,448,673- 21,882,145
Payne-Aldrich law, 1910-1911.....	18,819,349- 22,333,344

"It is, however, admitted that protective tariff rates will not produce maximum revenue results when crops fail or credits are over-extended, but unquestionably business must be reasonably protected against unfair foreign competition and freed from doubt and uncertainty if maximum revenues from imports are expected.

Finished Products Free and Raw Materials Taxed

"The bill is discriminatory and unfair because it places finished products on the free list, while taxing the raw materials from which such finished products are manufactured. The bill is disturbing and sectional because it aims to benefit one class at the expense of another, as it proposes legislation in favor of the farmer at the expense of labor employed in manufacture. There are no items under Schedule C which in my opinion would warrant you in placing them on the free list because they have not been heretofore revenue producers, it being my contention that heretofore prohibitive tariff rates prevented or that trade conditions have been such as to discourage such imports. But eventually I think the Payne schedule will demonstrate its revenue character, as foreign competition is now difficult to meet at distant seacoast points, like the Pacific coast, and with any reverse in trade conditions abroad all seacoast points would be seriously exposed unless American manufacturers are prepared to accept heavy reductions in price, and in many cases to sell without profit, as has been the history of many transactions during the past 18 months in a number of the markets referred to. It should not be overlooked in this connection that Great Britain and Germany, which produce substantially 35 per cent. of the world's output of steel, are under the compulsion of exporting approximately one-half of their total output, and with any trade recession at home or in the neutral markets of the world efforts would be made immediately to invade our home markets.

Lower Steel Prices Mean Lower Wages.

"It should also not be overlooked that our markets are menaced by the competition of India and China, which countries have vast stores of raw materials undeveloped and millions of workers whose labor is available at rates of compensation which it would be impossible for our labor to meet in competition and exist.

"If revenue necessities justify incidental protection by a tax on imports, as is partially provided in Schedule C, it should be made to apply to all products under this schedule, as capital in one branch of the steel industry should not be nominally protected at the expense of some other branch, or labor exposed to free trade in one branch of the steel business while another is protected.

"No practical man believes that labor conditions and rates which now maintain in this country could be continued, in event of placing any of the products under Schedule C on the free list, without reducing profits to an extent that would bring about enforced shutdowns of works, pending wage adjustments. It should be apparent to all, therefore, that two standards of wages could not be maintained, such as would be called for under the Underwood bill, viz., a standard of wages, consistent with free trade in some products, with a higher standard of wages in other branches of the steel business where protection is conceded for revenue purposes. I believe that the business of this country can adjust itself in time to any competitive basis, provided a competitive wage standard is established. The influence of labor organizations, as is generally understood, is directed toward the

maintenance of maximum rates of wages, but a level rate under the conditions recited, viz., a double standard of taxing imports, would be an impossible proposition for even the strongest labor organization. With all important commercial nations of the world, England excepted, protective home industry from unreasonable competition by adopting a protective tariff policy, it is difficult to reconcile present desire for further tariff reductions, particularly in Schedule C, except as a popular move against the trusts.

Trusts and Independents

"In this connection I want to emphasize the fact that there are no trust-made products under Schedule C which are not also the product of hundreds of smaller manufacturers who are not protected or entrenched by capital reserves, raw materials, or facilities for doing business which apply to the larger corporations. These smaller manufacturers are scattered over many states, North and South, and are engaged in the manufacture of such products as cotton ties, baling hoops, wire and wire products, sheets, tin plate, steel bars, spikes, tubes and other products. Their operations are based on such raw materials as pig iron, billets, sheet bars, or skelp, which raw materials are all protected by a revenue tax, and it should be apparent that to place these finished iron or steel products on the free list would be rank discrimination and would place these smaller companies not only at a great disadvantage in competing with the larger domestic producers, but would expose them to extermination by foreign competition. This policy, in my opinion, could only result in strengthening the position of the larger manufacturers at home by reducing home competition, and ultimately expose the consumer to increased costs, which would naturally follow a reduction in supply and greater concentration of production.

"A further objection to the Underwood bill is that it places iron ores from which ferromanganese is manufactured on the free list, and inasmuch as there are substantially no manganiferous ores of the character required produced in this country the proposed bill therefore shuts off Government revenue to the extent of taxes, which would otherwise be collected on such iron ore imports; it would also, with ore on the free list, expose the smaller manufacturers of steel, whose operations are not sufficiently large to justify making their own ferromanganese from imported ores, to the disadvantage of purchasing ferromanganese carrying the increased taxes, with the resultant increase in steel costs, which, in the case of our company, would amount to approximately \$57,000 per annum."

Mr. Topping said that the bill was also objectionable on account of its inconsistency, as it places on the free list bands used for baling or tying purposes, whereas under another paragraph hoops and bands cut to length are entered for taxation; and again, nuts and washers are placed on the free list whereas when nuts and washers are connected up with bolts they are entered on the protective list.

Protection and Wages

Concerning the benefits derived by labor from a protective tariff and in connection with wages paid, Mr. Topping said:

"The falsity of the claim that protection does not benefit labor must be apparent to anyone who will carefully study the commissioner's report. The Republic Iron & Steel Company for the year ending June 30, 1912, shows in its published report that it employed on an average for that year 11,723 men and disbursed in wages \$8,798,160.47, or an average of approximately \$2.50 per day, which average is made up on the basis of labor rates which cover employment per working day on a minimum of \$1.75 for common labor, to as high as \$20 per day for skilled labor. Present wage rates are, on an average, higher than at the date of the publication of the commissioner's report, and on the whole successful efforts have been made to reduce working hours; living conditions have also been substantially improved, so that to-day steel workers' wage rates and conditions of living are the best in the history of the trade.

"While wages have been on an advancing scale abroad, foreign rates to-day are still far below American rates

In this connection I would refer you to Special Agent Charles M. Pepper's report on foreign trade conditions, to the United States Department of Commerce and Labor, submitted January 7, 1909. Particular reference is made to page 24 of this report, from which it will be noted that the average steel workers' wages recorded in the Düsseldorf district, figured at 300 working days per annum, reduced to the United States standard, is approximately \$1.15 per day, whereas the published reports of the United States Steel Corporation's employees' wages for 300 working days show an approximate average of \$2.55 per day."

Steel Corporation Profits Not a Criterion

Mr. Topping added that the public opinion which has insisted upon fair treatment of labor and fair rates of compensation to workers would on a better understanding of actual manufacturing profits also insist upon a square deal for capital. He said that the earnings of the United States Steel Corporation have, in a measure, exaggerated the profits obtainable from steel manufacturing. But when it is considered that the profit showing of this great corporation reflects not only the profits from steel and iron manufacture, but also shows income from railroads, steamships, chemical works, cement and other by-products, or collateral interests, which tie in with the conduct of their great business, it should be readily conceded that the showing of the smaller manufacturers, whose operations are strictly confined to steel manufacturing would offer a fairer example of actual profits in the steel business.

"For this reason," continued Mr. Topping, "I would call your attention to the earnings of my own company, which for the past five years has returned a profit to its shareholders of 7 per cent. on the preferred and 1.8 per cent. on its common stock, which profits represent manufacturing and mining operations with transportation and collateral profits excluded. These profits are based on what I regard as a fair capitalization for the property assets owned by the Republic company, whose operations are supported by managing ability the competency of which is readily ascertainable. The showing of profits by the Republic Iron & Steel Company represents better results than would be claimed on an average and should convince your committee that competitive conditions in the steel trade are not absent; that we of the steel business, regardless of what may have previously existed, have not been favored by special privilege within recent years, present conditions reflecting rather the reverse of this situation, or a case of "survival of the fittest."

Recommendations

In concluding his statement, Mr. Topping said:

"In conclusion, it is my general recommendation that in all paragraphs of H. R. 18642 of the Sixty-second Congress, to which I have addressed myself, specific rates of duty of the Payne law be substituted for Underwood ad valorem rates, and that all items proposed for free entry, viz., under paragraphs 67, 68, 69 and 70 of the Underwood bill, be retained on the dutiable list under the Payne bill as the Payne schedule, with its approximate reduction of 50 per cent. below the Dingley bill, is sufficiently low to satisfy the demand for reduction downward, and Schedule C of the Payne law should not be changed.

"I would further recommend a rearrangement of classification for items under Schedule C, governing both imports and exports, by providing separate groupings for iron and steel commodities from products and machines or parts thereof manufactured from fabricated iron and steel or other materials, as follows:

"A. Raw or finished iron and steel commodities classified under separate items, listing in detail these items under their proper trade designations; this change in classification contemplates eliminating substantially the item 'Miscellaneous manufactures,' under which heading important details are covered up.

"B. Grouping fabricated products, such as implements, tools and machines, or parts thereof, under their respective trade designations, so far as it is practicable to do so."

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CONTENTS.

Material Handling Plant in a Scrap Yard.....	187
Powdered Coal as Open Hearth Fuel.....	188
Microscopic Study of High Speed Tool Steels.....	189
A New North Wales Hack-Saw Machine.....	191
Norton Companies' Conference	191
A Universal Multiple-Spindle Drill Head.....	191
New Canadian Pacific Coal Handling Plant.....	192
New 16-In. Cisco Engine Lathe.....	195
Compressed Air as a Foundry Auxiliary	196
New Giraud Chain Making Machine.....	199
John D. Hibbard, Metal Trades Commissioner.....	199
Getting the Most Out of the Shop.....	200
New Open Hearth Furnace Features	202
Latin-American Machine Tool Market	202
Tariff Hearings at Washington.....	203
Chairman Topping on the Iron and Steel Tariff.....	206
Iron and Steel Imports as Revenue Makers.....	208
The Steel Corporation in Canada.....	209
Merchant Furnace Output in 1912.....	209
Utilizing the Parcel Post.....	209
The Iron Age Index.....	209
Correspondence	210
December Copper Production and Stock.....	210
The Steel Corporation's Wage Advance	210
Matthew Addy & Co.'s Offices Burned.....	210
Correctness in Choice of Words.....	211
New England Foundrymen's Association.....	211
Highest Puddling Wage in Years.....	211
The Steel Corporation's Unfilled Orders.....	211
New Steel Hoop Card.....	211
James Gayley to Receive Perkin Medal.....	211
Lackawanna Steel Company Dividend.....	211
Iron and Metal Markets.....	212
Personal	225
Obituary	226
Pittsburgh and Vicinity Business Notes.....	226
The Trumbull Steel Company's New Plant.....	226
Westinghouse Machine Company's Financing.....	228
Pennsylvania Business Legislation	228
Even China Knows Toncan Metal	228
Brennen-Smyth Steel Castings Company.....	228
Elbery Drill & Tool Company Goes to Toledo.....	229
Parcel Post Business	229
The Griffin Wheel Company.....	229
New York Monthly Meeting of Mechanical Engineers.....	229
The Machinery Markets	230
Trade Publications	238
General Pipe, Bending & Erecting Company.....	238

Iron and Steel Imports as Revenue Maker

Chairman Underwood, of the House Ways and Means Committee, in one of his colloquies with John A. Topping, chairman of the Republic Iron & Steel Company, at the tariff hearing of last Saturday, bluntly said that he expected the iron and steel manufacturers of the United States to give up a part of their business. He explained that what he and his associates are preparing is a tariff bill which will yield revenue. Wool imports brought \$40,000,000 in duties into the national treasury in the fiscal year 1909, and iron and steel imports must contribute their share. Mr. Topping voiced a sentiment which has been quite common among our steel manufacturers in discussing the prospect of lower duties on their products, in saying that he knew of no intention to give up any part of the home market to foreign manufacturers. Lower duties might encourage competition from foreign steel works, but a way would be found to meet this competition. New economies in production would be enforced, he said; efficiency would be increased; labor saving appliances would be employed more generally; profits would be sacrificed if necessary; and finally, if further lowering of cost were required to repel invasion, labor would come in for its share.

We confess surprise at the avowal of Chairman Underwood that in the pursuit of revenue there is a deliberate purpose to swell the stream of imports and correspondingly displace home products. If a tariff bill is to be voted a success that lets in foreign products to the extent of, say, 5 per cent. of the home production in iron and steel, presumably it would be a prodigious success if it resulted in substituting foreign-made goods for 25 per cent. of what had been made in home works. The new patriot must therefore be the home manufacturer who refuses to set so hot a pace for his foreign competitor, striving to get a foothold here, as to deprive the Government of the revenue it can collect if proper hospitality is shown to incoming products.

Pondering over this proposal so ingenuously made to American steel manufacturers at Saturday's tariff hearing makes it less rather than more convincing. It is apt to occur to some who had their training in an earlier school of economics that it is sound policy to increase the volume of manufacture at home and thus make the country better able to bear taxation for Government expenses. In Mr. Topping's reference to the payrolls of his own company there is suggestive comment on the peculiar economy of this proposal to raise revenue at the custom house by reducing the number of jobs at home.

The response the steel trade will make to Chairman Underwood's plan to have it do its "share" in increasing the revenues coming from steel imports is scarcely in doubt. There have been some intimations from Europe that large exports to this country are counted on when the proposed iron and steel duties are put on the statute books and the steel making countries yonder come into slacker times. The Pacific coast is chiefly thought of in this connection. To some extent these expectations may be realized there; also on the Gulf of Mexico, when the Panama canal is opened. But in the main they will be disappointed. Only for boom years like 1902, 1903, 1906 and 1907 will iron and steel duties become more than a nominal factor. The iron industry's contribution to Government support will have to be made in ways more direct.

The Steel Corporation in Canada

The formal announcement by the United States Steel Corporation that it has prepared plans for the building of extensive Canadian steel works and finishing mills in the vicinity of Sandwich, Ontario, which is on the Detroit River opposite Detroit, was not unexpected. Preliminary steps in the establishment of Canadian works were taken more than six years ago, when considerable purchases of land were made. These have been added to and the property now takes in a river frontage of one and a half miles. Plans have not yet been worked out in detail, but it is expected that the construction work will begin in the coming spring and that blast furnaces will be erected, together with open hearth steel works and wire, rail, structural and bar mills, the contemplated outlay being put at \$20,000,000.

The trade of the Steel Corporation in Canada has been growing steadily, amounting last year to several hundred thousand tons, but it has never engaged in manufacture on that side of the line, apart from the operation of a bar and woven wire fence works at Hamilton, Ontario. The duties of \$7 a ton on rails, bars, sheets and some other products, including small shapes, and of \$3 a ton on structural shapes heavier than 35 pounds to the yard and on wide heavy plates are a considerable handicap on exports to Canada, especially with the preferential tariff to Great Britain and the intermediate tariffs granted some other nations. But proximity has been an important advantage to the United States and exports of iron and steel from this country have grown under the great railroad developments of the past few years and the expansion of Canada's industries concurrently with the building up of the vast agricultural empire of her far west. Canada's own iron and steel industry has made a good growth under marked government encouragement, but the home production has not kept pace with the demand. Dependence on outside sources of raw material has been a handicap and one important steel plant located with a view to engaging largely in the export trade has the disadvantage of a considerable haul to rapidly developing consuming districts.

In establishing works in Canada the Steel Corporation follows the example of many lesser American companies, for the colonization of American industries has gone on steadily, particularly in Ontario, in the past decade. Iron ore and coke are admitted free to Canada, and steel works there have the advantage also of an excellent labor market. Canada imposes a duty on bituminous coal, but on slack this amounts to but 14 cents a ton as against 53 cents a ton for run-of-mine. The low duty which would have to be paid on coal for coking would be considerably more than offset by the breakage in transport of coke made on this side of the line, and therefore, it is probable that coke ovens will be built in connection with the Sandwich works. There is, of course, the possibility that the duty on coal used for metallurgical purposes would in time be entirely wiped out. The Steel Corporation's large reserves of low-cost iron ores on Lake Superior and its facilities for bringing Pennsylvania coals to the Sandwich site, together with a labor cost lower than that in the Pittsburgh district, should give it a low production cost at the new site and make its competition with Canadian steel works such as might at times be severely felt. At the same time, if such reductions are made in our iron and steel duties as are now

proposed, Sandwich might even become a center of manufacture for products which could be marketed advantageously on either side of the line.

Merchant Furnace Output in 1912

Commenting on the pig iron production of the United States in 1912, we called attention last week to the probability that when the official figures are published they will show but a few thousand tons difference between the total for last year and that for the twelve months ending June 30, 1910, which has been pointed to as the twelve months of the highest production the industry has known, at 29,751,863 tons. There is an important difference in the character of the output of the two periods, however, in that in 1912 the production of steel-making pig iron was very much larger than in the year ending June 30, 1910. From our monthly statistics of the production of coke and anthracite pig iron we have taken the following figures showing how much less the merchant furnaces produced last year than in the other twelve-month period:

<i>Coke and Anthracite Pig Iron Production in Two Twelve-Month Periods—Gross Tons</i>		
	Year ending June 30, 1910	Year ending Dec. 31, 1912
Steel companies	19,960,724	21,667,674
Merchant furnaces	9,322,801	7,715,816
	29,283,525	29,383,490

It thus appears that while the total production of coke and anthracite iron in the two periods was practically the same, the production of pig iron by steel companies last year was about 1,700,000 tons greater than in the twelve months of the remarkable movement of 1909-1910. The merchant furnace output last year was correspondingly less, indicating for one thing a smaller consumption of foundry iron; for another, smaller purchases of pig iron in the market by steel companies, and also the fact that stocks of pig iron were drawn upon last year, while in the other period of equal pig iron production there was a considerable accumulation of stock.

The figures reflect plainly the large use of steel last year for railroad purposes, in contrast with meager railroad buying in 1909 and 1910.

Utilizing the Parcel Post

Already manufacturers and dealers are using the parcel post for the sending of repair and other parts to customers. In a great many cases the weight of such shipments are within the 11-lb. limit, and experience is proving that deliveries are made expeditiously. In fact the mails are taking a conspicuous place in the transportation of all classes of small metal goods. The heads of the post offices in the cities and large towns are expressing fear that the efficiency of parcel post will be seriously handicapped later by congestion. Its employment in business has grown with astonishing rapidity in the first two weeks of its operation, and known plans of manufacturers and merchants indicate that only a beginning has been made.

The Iron Age Index

The index to Volume 90 of *The Iron Age*, July 1 to December 31, 1912, has been compiled and printed and will be mailed to subscribers applying for it. A

list of those who have received the index heretofore is kept in this office and to all such the latest will be mailed without notice from them. Additional names will be put on this list on request.

Correspondence

Is Wrought Iron in Its Decadence?

To the Editor: There are good indications and significant signs that iron is regaining the alleged lost prestige imputed to it by some pessimists. At least there are many manufacturers in finished lines of wrought iron who are much enheartened by the better outlook and the growing appreciation of the intrinsic merits of their products.

The present enlarged demand for iron is not wholly ascribed to the overflow from steel, which can hardly supply its demand at present, but rather that intelligent consumers of iron and steel are discriminating as never before in the selection of their materials to find the most available thing to accomplish definite results. For certain lines of work steel is preferable, while for other lines wrought iron possesses characteristics peculiarly its own which give it clearly the preference.

For example, if density, homogeneity, rigidity, high tensile strength and qualities of that character are deemed indispensable for the work required, steel will clearly have the first place. Again it may be work continuously exposed to the elements where material is especially selected to resist the remorseless tooth of time; in such cases iron has come to be the recognized champion in fighting rust and corrosion. There is remarkably strong testimony on this line; and one case only need be cited, which comes from an eminently reliable source, namely, in the vicinity of Pittsburgh there can yet be seen an iron roof which has successfully stood exposure to the elements for 40 years, and in a section where murky, sulphur-charged atmosphere constantly prevails.

There is a large amount of work calling for material which has the greatest endurance in resisting vibratory strains; where supreme emphasis is put on this feature and fatigue value is a prime necessity, the higher grades of iron and iron only will be considered, for expert tests always show that iron is the leader in this regard. Where any danger of crystallization is rigidly to be guarded against, iron will have the preference over steel, even though the latter should be low in carbon.

In an article in the New York Times, January 18, 1912, it is stated that British railroad engineers have come to the belief that for many purposes in car building iron is preferable to steel and the suddenly awakened demand for wrought iron called for in their specifications made it necessary to reopen a number of puddling furnaces which had been closed for years.

It is too late in the day to commit the folly of "knocking" steel. It has been perfected through centuries of change and evolutions; its grip is tremendous; its tonnage right of way is indisputable, yet it has its limitations. Its structure differentiates from iron, the latter being fibrous and the former granular or crystalline. Steel cannot fill the bill for all cases and classes of work. Iron has stayed in the ring from the crudest beginnings of 3000 or more years ago. It has its mission and field, and will hold them probably for generations yet unborn not only in the clearly admitted field for high-grade iron, but in a thousand uses to which good refined wrought iron can be put where better results in lasting and wearing qualities can be obtained than from the use of steel. The consuming world is coming to know the functions which each metal can best perform and the perpetuity of both seems assured.

Some new great discoverer like Bessemer may arise or a wizard like Edison may yet find new processes and alloys that will both cheapen and improve the grades of iron and steel, but in the ordinary course of events, broadly speaking, iron and steel will hold their respective zones of influence, and the friends of iron seem confident that a wider sphere of usefulness is already in evidence for them.

J. S. M.

December Copper Production and Stock

The Copper Producers' Association has issued its monthly statement for December, which makes the following showing as compared with November:

	December. Pounds	November. Pounds
Stock of marketable copper of all kinds on hand at all points in the United States at first of the month.....	86,164,059	76,744,964
Production of marketable copper in the United States from all domestic and foreign sources in the month.....	143,354,042	134,695,440
Deliveries of marketable copper in the month: For domestic consumption.....	58,491,723	69,369,795
For export	65,713,796	55,906,550
Total deliveries	124,205,519	125,276,345
Stock of marketable copper of all kinds on hand at all points in the United States at close of the month.....	105,312,582	86,164,059

While December deliveries were but 1,070,826 lb. less than in November, the production increased heavily, so that the stock at the close of December showed an increase of 19,148,523 lb., which was much more than had been expected.

According to the monthly statements, the total production of 1912 was 1,581,920,287 lb., against 1,431,938,336 lb. in 1911. The total deliveries of the year were 1,566,062,400 lb., showing an excess of output over deliveries of 15,857,887 lb., the stock on hand having increased that much in the year.

The Steel Corporation's Wage Advance

Elbert H. Gary, chairman United States Steel Corporation, makes the following statement under date of January 14:

"In accordance with the recent announcement made by the chairman respecting an adjustment in wages, many of the subsidiary companies of the United States Steel Corporation have made up their schedules, which together aggregate an increase in wages of about \$1,000,000 per month, commencing about February 1. These benefits largely apply to the workmen receiving the lowest daily wages. Some of the mining companies are not included, for the reason that wages have been heretofore adjusted by those companies and are now above the average."

Matthew Addy & Co.'s Offices Burned

The offices of Matthew Addy & Co., Cincinnati, Ohio, were destroyed by fire early in the morning, January 3, by the burning of the Carlisle Building. They had been located in this building since 1886, occupying one-half of the second floor. All of their current correspondence and all of their files and records were lost. Their safes were carried down by the collapse of the building into the basement and still lie buried under a great heap of brick and stone. It may not be possible to recover these safes for another week. The firm lost no time, however, in securing a temporary office in the First National Bank Building, and it was open and ready for business at 9.30 on the morning of the day on which the fire occurred.

Matthew Addy & Co. possessed a very valuable technical library, which was in the front of their office, and this and one or two desks were the only things that were saved. In other respects their loss was heavy, and the annoyance and inconvenience to which they are being put are of course quite serious.

Plans are being prepared for an extensive foundry plant to be erected at Hamilton, Canada, at an approximate cost of \$250,000 by the Hamilton Malleable Iron Company, Ltd., recently incorporated with a capital stock of \$600,000. The main foundry building will be 200 x 600 ft., and will contain four 15-ton melting furnaces, annealing furnaces, complete cleaning and finishing equipment and high speed electric traveling cranes. Other buildings include a machine shop, carpenter and pattern shop, storehouse, pattern storage vault and office. Runway cranes will serve the foundry yard. Compressed air molding machines, sand blast equipment, tumbling barrels, etc., will be provided. J. E. Hammond, formerly with the Pratt & Letchworth Company, Brantford, will be managing director.

Correctness in Choice of Words

The Mining and Scientific Press, San Francisco, publishes the following lucid and instructive statement regarding the correct use of certain words which are too often erroneously employed, not only by engineers but also by writers for technical journals:

"Misuse of the terms 'build,' 'construct,' 'erect' and 'install' is a common fault of engineers, for, strangely enough, men who would ridicule an attempt to couple pipes with a monkey wrench do not exhibit an equal amount of discrimination in regard to choice of words as they do to choice of tools. In such a case words may belie actions, for the natural inference of the thoughtful reader or listener is that a man who is careless in his speech or writing is probably equally slovenly in his work. 'Install' is so often misused in connection with construction work that some careful writers abstain from using it. This is unfortunate, for, in its rightful meaning of 'to put into position for work,' it is an extremely useful word that cannot well be spared. For example, a mining company builds a shaft-house, and a manufacturer constructs a hoist, which is then installed in the shaft-house. In his shop the manufacturer makes the parts of the hoist, and when they are finished, he erects or assembles the hoist before it is shipped to the mine. All the verbs in these two sentences are correctly used.

"Construct," from a Latin root, is almost synonymous with the Anglo-Saxon word 'build,' but not exactly so; thus it might be said that an additional window was constructed (not built) in the side of the house. 'Erect' has the idea of elevation; a tower is erected, constructed, or built; a ditch is dug or made. A thing is made from raw materials or erected by joining together component parts; thus, the parts of a stamp-mill are first made of wood and iron, then erected. Both 'construct' and 'build' have a sense of importance; the contractor builds a residence or constructs a bridge, and in his leisure hours makes a doll house for his little daughter. To 'install' is simply to put in place; a hoist may be installed, but not a tramway or an ore bin. To convey to the mind of another person the precise mental image of the speaker or writer is at best a difficult task; without careful attention to the forms of speech employed, it becomes impossible."

New England Foundrymen's Association

The New England Foundrymen's Association held its annual meeting at the Exchange Club, Boston, on the evening of January 8, with an attendance of more than 100. The election of officers resulted as follows: President, Robert C. Bird, Broadway Iron Foundry, Cambridge, Mass.; vice-president, Charles L. Nutter, Old Colony Foundry Company, East Bridgewater, Mass.; treasurer, George H. Gibby, Gibby Foundry Company, East Boston; secretary, Fred F. Stockwell, Barbour-Stockwell Company Cambridge; executive committee, Charles A. Reed, Reed, Fears & Miller Company, Boston; J. C. Horsford, Magee Furnace Company, Boston; D. K. Bartlett, Builders' Iron Foundry, Providence, R. I.; A. L. Clark, American Brake Shoe & Foundry Company, Norwood, Mass., and A. F. Corbin, Union Mfg. Company, New Britain, Conn. After the excellent dinner President Bird addressed the members briefly and introduced Charles L. Newcomb, the retiring president, who spoke strongly of the prosperity and usefulness of the organization. A first-rate vaudeville entertainment closed the evening.

Highest Puddling Wage in Years.—At the bi-monthly wage conference between representatives of the Amalgamated Association of Iron, Steel and Tin Workers and the Republic Iron & Steel Company, January 10, the rate for puddling for January and February was advanced from \$6.15 to \$6.45 on a 1.40c. card rate. This is the highest wage paid to puddlers in five years.

The property of the Pressed Steel Pole Company, Mount Pleasant, Pa., formerly in receivers' hands, has been purchased by the American Cross Arm Company, Pittsburgh. The new owner is planning to begin operations at once.

The Steel Corporation's Unfilled Orders

The statement issued January 10 showed that on December 31 the United States Steel Corporation subsidiaries had on their books 7,932,164 tons of unfilled orders, as compared with 7,852,883 tons on November 30, an increase of 79,281 tons. This compares with an increase in November of 258,502 tons and confirms the general experience of a slowing down in new business in December. The surprise is that any increase at all is shown. Below is given the Steel Corporation's unfilled tonnage statement by months since the beginning of 1911, and previous to that by half-year periods:

December 31, 1912....	7,932,164	March 31, 1911.....	3,447,301
November 30, 1912....	7,852,883	February 28, 1911....	3,400,543
October 31, 1912....	7,594,381	January 31, 1911....	3,110,919
September 30, 1912....	6,551,507	December 31, 1910....	2,674,757
August 31, 1912....	6,163,375	June 30, 1910.....	4,257,794
July 31, 1912.....	5,957,079	December 31, 1909....	5,927,031
June 30, 1912.....	5,807,346	June 30, 1909.....	4,057,939
May 31, 1912.....	5,750,983	December 31, 1908....	3,603,527
April 30, 1912.....	5,664,885	June 30, 1908.....	3,313,876
March 31, 1912.....	5,304,841	December 31, 1907....	4,624,552
February 29, 1912....	5,454,200	June 30, 1907.....	7,603,878
January 31, 1912....	5,379,721	December 31, 1906....	8,489,719
December 31, 1911....	5,084,761	June 30, 1906.....	6,809,859
November 30, 1911....	4,141,955	December 31, 1905....	7,605,086
October 31, 1911....	3,694,328	June 30, 1905.....	4,829,655
September 30, 1911....	3,611,317	December 31, 1904....	4,696,203
August 31, 1911....	3,584,085	June 30, 1904.....	3,192,277
July 31, 1911.....	3,695,985	December 31, 1903....	3,215,123
June 30, 1911.....	3,361,058	June 30, 1903.....	4,666,578
May 31, 1911.....	3,113,187	December 31, 1902....	5,347,523
April 30, 1911.....	3,218,704		

New Steel Hoop Card

The Carnegie Steel Company, Pittsburgh, has issued a revised card of extras on steel hoops, effective January 2. It is expected that the other manufacturers will adopt it, thus making it standard, as they did with the Carnegie hoop card of April 2, 1909, when bands were dropped, thus throwing them into the bar card of extras.

The 1913 card makes a revision in the direction of increasing extras on the lighter gauges, the previous extras having fallen short of taking account of the increased cost of manufacture, through the output of a mill being much less on light than on heavy gauges. The heavy gauges generally are left unchanged. In many sizes the old card carried No. 24, which gauge is omitted entirely in the new one. In the lighter gauges in each size the increases in extras generally run up to from 40 to 60c. per 100 lb. The smallest extra on the hoop card is 10c. per 100 lb., no material being shipped at the base price quoted as the market on hoops.

James Gayley to Receive Perkin Medal

An exceptionally interesting meeting of the New York Section of the Society of Chemical Industry is to be held Friday evening, January 24, at Rumford Hall, 50 East Forty-first street, New York. The Perkin Medal will at that time be presented to James Gayley. The programme for the occasion is as follows: Introductory remarks by the chairman, M. C. Whitaker, Columbia University; presentation of the medal and address by Charles F. Chandler, senior American past president of the Society of Chemical Industry; acknowledgment by James Gayley; the metallurgy of steel, by Prof. Henry M. Howe; Dr. Gayley's interest in education, by Edward Hart; address by Dr. R. W. Raymond.

Lackawanna Steel Company Dividend.—At a meeting of the board of directors of the Lackawanna Steel Company, held in New York January 14, a dividend of 1 per cent. on the common stock of the company was declared from the net earnings for the year 1912, payable January 31, 1913, to stockholders of record at the close of business January 24.

Alexander Muir, formerly manager for Cammell Laird & Co. of New York, and Arthur C. Davidson, who was a steel specialist with the same house, have formed the Muir-Davidson Steel Company and established an office and warehouse at 44 Cliff street, New York. The new company is general agent in the United States and Canada for Samuel Fox & Co., Ltd., steel manufacturers, Sheffield, England, and will handle their line of crucible tool steels, carbon steel and nickel and chrome steels for automobiles, including springs, tires and axles.

The Iron and Metal Markets

Some Weakness in Pig Iron Bessemer Firm Under Steel Works Buying An Advance in Sheets—Short Labor Supply at Lake Iron Mines

Continuing strength in the finished steel position is accompanied by some yielding in pig iron, which, however, is not evident in all markets or in all grades.

More is heard of \$13.50 No. 2 Southern foundry iron for first quarter delivery. A number of Tennessee furnaces, with their advantage in freight to the North, are selling at prices figuring back to \$13.50, Birmingham, both for first and second quarters, though Birmingham producers as a rule hold to \$14. In Cincinnati, Chicago, Cleveland and other centers weakness in Southern foundry iron is reported. In all markets foundry buyers are more disposed to hold off and those sellers who looked for January contracting for the later months of the year are now setting the time some weeks forward.

In eastern Pennsylvania the quietness in pig iron has raised some questions, in view of the recent and prospective additions to blast furnace capacity. About 5500 tons of pipe iron was sold in that district at delivered prices of \$17.50 and slightly higher. Through Cincinnati about 8000 tons of Southern pipe iron was sold for Eastern delivery.

Steel making pig iron shows some cross-currents. In the Pittsburgh district the steel works furnaces are feeling the effects of the pace. One Eliza and one McKeesport furnace were forced out in the past week. The loss of the former led to the buying of 30,000 to 40,000 tons of Bessemer pig iron for the first quarter, largely at \$17.25, but in part at \$17.35, Valley furnace. Further purchases of Bessemer iron are expected and \$17.35 at furnace is asked.

Sales of basic iron at \$16.35 at Valley furnace show an easier market and the same indication is given by offers of basic iron at \$18 delivered in eastern Pennsylvania. Sales of 30,000 tons of basic by a Birmingham interest have been made in the past week.

Italy and Austria are again in the market for Southern iron, and some business has been put through at close to domestic prices.

The Steel Corporation's new orders since the opening of the year are reported to be about equal to shipments, but there have been no large contracts. Companies whose product is largely in one or two lines have noticed some falling off. But so much of the business on all books is for definite work, particularly in the case of the railroads, that full operation of all mills is counted on for many months.

An advance of \$2 a ton in sheet products made by the American Sheet & Tin Plate Company, January 14, brings blue annealed to 1.75c. for No. 10, black sheets No. 28 to 2.35c. and galvanized to 3.50c. Some mills went to this basis in December.

An interesting situation may yet develop in cotton ties. Due in part to the expectation that this product will be put on the free list, and in part to the more attractive prices for hoops and bands, the mills have not been rolling the stock of cotton ties usually accumulated in advance of the season. Europe, under present conditions, could do little to make up any shortage that might result.

A new card of extras on hoops has been brought out at Pittsburgh, which represents slight advances on lighter gauges.

Chicago reports particularly heavy specifications from railroads in the past week. In spikes the volume has been large and there are other indications that track work has been carried on several weeks later

than usual. In the week's car contracts are 2500 for the L. & N., 500 for the Pittsburgh & Lake Erie, and 2000 for the Steel Corporation, which is yet to buy 2250.

Among structural contracts are 2500 tons of bridge work for the New Haven, 3000 tons of galvanized transmission towers, and 2700 tons for the Brooklyn Institute of Arts and Sciences. Subway work will soon make heavy demands upon the mills.

Wrought pipe orders have been more this month than in the first half of December. For 100 miles of 20-in. pipe for natural gas in the Pittsburgh district the leading interest has just booked 20,000 tons. The Columbia Gas & Electric Company's 180 miles of 12-in. pipe is reported to have been placed at Youngstown.

Portland, Ore., awarded 6000 tons of cast iron pipe to a local bidder. Detroit is taking bids on 3800 tons.

Steel companies are scouring the country for billets, but producers are sold up for the first quarter and largely for the first half. For open hearth steel \$20, Pittsburgh, is freely offered. British inquiry for 20,000 tons of billets, on which nothing could be done early in December when it first came, has reappeared in Eastern markets, but no business is expected to result.

At Lake Superior iron mines the labor situation is giving some concern. From the exodus to Europe in the fall of last year there has been no return, and though open pit mining is stopped by winter there is a scarcity of labor for underground work. Doubt is felt of the getting out of 50,000,000 tons this year unless the situation is greatly helped soon.

A Comparison of Prices

Advances Over the Previous Week in Heavy Type,
Declines in Italics.

At date, one week, one month and one year previous.

	Jan. 15,	Jan. 8,	Dec. 18,	Jan. 17,
Pig Iron, Per Gross Ton:	1913.	1913.	1912.	1912.
Foundry No. 2 X, Philadelphia.	\$18.50	\$18.50	\$18.50	\$14.85
Foundry No. 2, Valley furnace.	17.50	17.50	17.50	13.00
Foundry No. 2 S'th'n, Cin'ti...	16.75	17.25	17.25	13.25
Foundry No. 2, Birmingham, Ala.	13.50	14.00	14.00	10.00
Foundry No. 2, furnace, Chicago*	18.00	18.00	18.00	14.00
Basic, delivered, eastern Pa.	18.00	18.25	18.25	14.25
Basic, Valley furnace.	16.35	16.50	16.50	12.50
Bessemer, Pittsburgh	18.15	18.15	18.15	15.15
Malleable Bessemer, Chicago*	18.00	18.00	18.00	14.35
Gray forge, Pittsburgh.	17.15	17.15	17.15	13.40
Lake Superior charcoal, Chicago	18.00	18.00	18.75	16.00

Billets, etc., Per Gross Ton:				
Bessemer billets, Pittsburgh...	28.50	28.50	27.00	20.00
Open hearth billets, Pittsburgh...	29.00	29.00	27.50	20.00
Forging billets, Pittsburgh...	36.00	36.00	34.00	28.00
Open hearth billets, Philadelphia	32.00	32.00	32.00	22.40
Wire rods, Pittsburgh.	31.00	30.00	30.00	24.50

Old Material, Per Gross Ton:				
Iron rails, Chicago.	17.50	17.25	17.25	15.00
Iron rails, Philadelphia.	18.00	18.00	18.00	16.50
Car wheels, Chicago.	17.25	17.00	17.00	13.25
Car wheels, Philadelphia.	16.25	16.25	16.00	12.50
Heavy steel scrap, Pittsburgh...	15.00	15.00	14.75	13.00
Heavy steel scrap, Chicago...	12.75	12.75	12.50	10.50
Heavy steel scrap, Philadelphia..	14.50	14.50	14.50	12.25

Finished Iron and Steel,				
Per Pound to Large Buyers:	Cents.	Cents.	Cents.	Cents.
Bessemer rails, heavy, at mill...	1.25	1.25	1.25	1.25
Iron bars, Philadelphia.	1.77½	1.77½	1.67½	1.27½
Iron bars, Pittsburgh.	1.70	1.70	1.70	1.25
Iron bars, Chicago.	1.57½	1.57½	1.57½	1.15
Steel bars, Pittsburgh, future.	1.40	1.40	1.40	1.15
Steel bars, Pittsburgh, prompt.	1.70	1.70	1.70	1.15
Steel bars, New York, future.	1.56	1.56	1.56	1.31
Steel bars, New York, prompt.	1.86	1.86	1.86	1.31
Tank plates, Pittsburgh, future.	1.50	1.50	1.45	1.15
Tank plates, Pittsburgh, prompt	1.75	1.75	1.75	1.15
Tank plates, New York, future.	1.66	1.66	1.61	1.31
Tank plates, New York, prompt	1.91	1.91	1.91	1.31
Beams, Pittsburgh, future.	1.50	1.50	1.45	1.15
Beams, Pittsburgh, prompt.	1.75	1.75	1.75	1.15
Beams, New York, future.	1.66	1.66	1.61	1.31
Beams, New York, prompt.	1.91	1.91	1.91	1.31
Angles, Pittsburgh, future	1.50	1.50	1.45	1.15
Angles, Pittsburgh, prompt.	1.75	1.75	1.75	1.15
Angles, New York, future.	1.66	1.66	1.61	1.31
Angles, New York, prompt.	1.91	1.91	1.91	1.31
Skelp, grooved steel, Pittsburgh	1.45	1.45	1.45	1.15
Skelp, sheared steel, Pittsburgh	1.50	1.50	1.50	1.20
Steel hoops, Pittsburgh.	1.60	1.50	1.50	1.25

*The average switching charge for delivery to foundries in the Chicago district is 50c. per ton.

Sheets, Nails and Wire,	Jan. 15, Jan. 8, Dec. 18, Jan. 17, 1913. 1913. 1912. 1912.			
	Cents.	Cents.	Cents.	Cents.
Round to Large Buyers:	2.35	2.25	2.25	1.90
Sheet, No. 28, Pittsburgh	1.75	1.75	1.75	1.55
Wire, f.o.b. Eastern mills	1.75	1.75	1.75	...
Cut, Pittsburgh	1.70	1.70	1.70	1.50
Fence, ann'd. 0 to 9, P'gh.	1.55	1.55	1.55	1.35
Barb. wire, galv., Pittsburgh	2.15	2.15	2.15	1.85

Coke, Connellsville, Per Net Ton, at Oven:				
Furnace coke, prompt shipment	\$4.00	\$4.00	\$4.00	\$1.85
Furnace coke, future delivery	3.25	3.25	3.25	1.70
Furnace coke, prompt shipment	4.50	4.50	4.50	2.00
Furnace coke, future delivery	3.75	3.75	4.00	2.15

Metals.				
Per Pound to Large Buyers:				
	Cents.	Cents.	Cents.	Cents.
Lake copper, New York	17.25	17.75	17.62½	14.62½
Electrolytic copper, New York	17.00	17.62½	17.37½	14.37½
Spelter, St. Louis	7.10	7.17½	7.15	6.50
Spelter, New York	7.25	7.30	7.30	6.65
Lead, St. Louis	4.20	4.20	4.17½	4.35
Lead, New York	4.35	4.35	4.32½	4.45
Tin, New York	51.00	50.45	49.87½	42.50
Ammony, Hallett, New York	9.37½	9.37½	9.37½	7.65
Tin plate, 100-lb. box, Pittsburgh	\$3.60	\$3.60	\$3.60	\$3.40

Finished Iron and Steel f.o.b. Pittsburgh

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Louis, 22½c.; Kansas City, 42½c.; Omaha, 42½c.; St. Paul, 32c.; Denver, 84½c.; New Orleans, 30c.; Birmingham, Ala., 45c.; Pacific coast, 80c. on plates, structural shapes and sheets No. 11 and heavier; 85c. on sheets Nos. 12 to 16; 95c. on sheets No. 16 and lighter; 65c. on wrought pipe and boiler tubes.

Plates.—Tank plates, ¼ in. thick, 6¼ in. up to 100 in. wide, 1.50c. to 1.75c., base, net cash, 30 days. Following are stipulations prescribed by manufacturers, with extras:

Rectangular plates, tank steel or conforming to manufacturers' standard specifications for structural steel dated February 6, 1903, or equivalent, ¼ in. and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, at base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per sq. ft., are considered ¼-in. plates. Plates over 72 in. wide must be ordered ¼ in. thick on edge, or not less than 11 lb. per sq. ft., to take base price. Plates over 72 in. wide ordered less than 11 lb. per sq. ft., down to the weight of 3-16 in., take the price of 3-16 in.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

Extras.	Cents per lb.
Gauges under ¼ in. to and including 3-16 in.	.10
Gauges under 3-16 in. to and including No. 2	.15
Gauges under No. 8 to and including No. 9	.25
Gauges under No. 9 to and including No. 10	.30
Gauges under No. 10 to and including No. 12	.40
Sketches (including straight taper plates) 3 ft. and over	.10
Complete circles, 3 ft. in diameter and over	.20
Boiler and flange steel	.10
"A. B. M. A." and ordinary firebox steel	.20
Still bottom steel	.30
Marine steel	.40
Locomotive fire box steel	.50
Widths over 100 in. up to 110 in., inclusive	.05
Widths over 110 in. up to 115 in., inclusive	.10
Widths over 115 in. up to 120 in., inclusive	.15
Widths over 120 in. up to 125 in., inclusive	.25
Widths over 125 in. up to 130 in., inclusive	.50
Widths over 130 in.	1.00
Cutting to lengths or diameters under 3 ft. to 2 ft., inc.	.25
Cutting to lengths or diameters under 2 ft. to 1 ft., inc.	.50
Cutting to lengths or diameters under 1 ft.	1.55
No charge for cutting rectangular plates to lengths 3 ft. and over.	

Structural Material.—I-beams, 3 to 15 in.; channels, 3 to 15 in.; angles, 3 to 6 in., on one or both legs ¼ in. and over, and zees, 3 in. and over, 1.50c. to 1.75c. Extras on other shapes and sizes are as follows:

	Cents per lb.
I-beams over 15 in.	.05
H-beams over 18 in.	.05
Angles over 6 in.	.05
Angles, 3 in. on one or both legs, less than ¼ in. thick plus full extras, as per steel bar card, Sept. 1, 1909.	.05
Tees, 3 in. and up.	.05
Angles, channels and tees, under 3 in. plus full extras as per steel bar card, Sept. 1, 1909.	.05
Deck beams and bulb angles	.30
Hand rail tees	.75
Checkered, trough and corrugated floor plates	.90
Cutting to length, under 3 ft., to 2 ft. inclusive	.25
Cutting to length, under 2 ft., to 1 ft. inclusive	.50
Cutting to length, under 1 ft.	1.55
No charge for cutting to lengths 3 ft. and over.	

Wire Rods and Wire.—Bessemer, open hearth and chain rods, \$31. Fence wire, Nos. 0 to 9, per 100 lb., terms 60 days or 2 per cent. discount in 10 days, carload lots to jobbers, annealed, \$1.55; galvanized, \$1.95. Galvanized barb wire, to jobbers, \$2.15; painted, \$1.75. Wire nails to jobbers, \$1.75.

The following table gives the price to retail merchants on fence wire in less than carloads, with the extras added to the base price:

Plate Wire, per 100 lb.									
Nos.	0 to 9	10	11	12 & 12½	13	14	15	16	
Annealed	\$1.70	\$1.75	\$1.80	\$1.85	\$1.95	\$2.05	\$2.15	\$2.25	
Galvanized	2.10	2.15	2.20	2.25	2.35	2.45	2.85	2.95	

Wrought Pipe.—The following are the jobbers' carload discounts on the Pittsburgh basing card on steel pipe (full weight) in effect from January 1, 1913; iron pipe (full weight), from October 21, 1912:

Butt Weld.					
Steel.			Iron.		
Inches.	Black.	Galv.	Inches.	Black.	Galv.
¾, ¾ and ¾	73	52½	¾ and ¾	67	48
¾	77	66½	¾	66	47
¾ to 3	80	71½	¾	70	57
			¾ to 2½	73	62
Lap Weld.					
2	77	68½	1½	57	46
2½ to 6	79	70½	1½	68	57
7 to 12	76	65½	2	69	59
13 to 15	53	..	2½ to 4	71	62
			4½ to 6	71	62
			7 to 12	69	56

Plugged and Reamed.					
1 to 3, butt	78	69½	1 to 1½, butt	71	60
2, lap	75	66½	2, butt	72	61
2½ to 4, lap	77	68½	1½, lap	55	44
			2, lap	66	55
			2½ to 4, lap	67	57
				69	60

Butt Weld, extra strong, plain ends.					
¾, ¾ and ¾	68	57½	¾	64	53
¾	73	66½	¾	68	61
¾ to 1½	77	70½	¾ to 1½	72	63
2 to 3	78	71½	2 and 2½	73	64

Lap Weld, extra strong, plain ends.					
2	74	65½	1½	66	60
2½ to 4	76	67½	2	67	59
4½ to 6	75	66½	2½ to 4	71	62
7 to 8	68	57½	4½ to 6	70	61
9 to 12	63	52½	7 and 8	64	54
			9 to 12	59	48

Butt Weld, double extra strong, plain ends.					
¾	63	56½	¾	58	50
¾ to 1½	66	59½	¾ to 1½	61	53
2 to 2½	68	61½	2 to 2½	63	55

Lap Weld, double extra strong, plain ends.					
2	64	57½	2	56	50
2½ to 4	66	59½	2½ to 4	61	55
4½ to 6	65	58½	4½ to 6	60	54
7 to 8	58	47½	7 to 8	53	43

The above discounts are subject to the usual variation in weight of 5 per cent. Prices for less than carloads are two (2) points lower basing (higher price) than the above discounts on black and three (3) points on galvanized.

Boiler Tubes.—Discounts on lap welded steel, in effect from January 1, 1913, and standard charcoal iron boiler tubes to jobbers in carloads are as follows:

Lap Welded Steel.		Standard Charcoal Iron.	
1½ and 2 in.	61	1½ in.	44
2 in.	58	1½ and 2 in.	48
2½ and 3 in.	64	2 in.	44
3 and 3½ in.	69	2½ and 3 in.	53
3½ and 4 in.	71	3 and 3½ in.	55
5 and 6 in.	64	3½ to 4 in.	58
7 to 13 in.	61	Locomotive and steamship special grades bring higher prices.	

2½ in. and smaller, over 18 ft., 10 per cent. net extra.

2½ in. and larger, over 22 ft., 10 per cent. net extra.

Less than carloads will be sold at the delivered discounts for carloads, lowered by two points for lengths 22 ft. and under to destinations east of the Mississippi River; lengths over 22 ft. and all shipments going west of the Mississippi River must be sold f.o.b. mill at Pittsburgh basing discount, lowered by two points.

Sheets.—Makers' prices for mill shipments on sheets of U. S. Standard gauge, in carload and larger lots, on which jobbers charge the usual advance for small lots from store, are as follows, f.o.b. Pittsburgh, terms 30 days net or 2 per cent. cash discount in 10 days from date of invoice:

Blue Annealed Sheets.		Cents per lb.
Nos. 3 to 8		1.70
Nos. 9 and 10		1.75
Nos. 11 and 12		1.80
Nos. 13 and 14		1.85
Nos. 15 and 16		1.90

Box Annealed Sheets, Cold Rolled.		
Nos. 10 and 11		2.00
No. 12		2.00
Nos. 13 and 14		2.05
Nos. 15 and 16		2.10
Nos. 17 to 21		2.15
Nos. 22 and 24		2.20
Nos. 25 and 26		2.25
No. 27		2.30
No. 28		2.35
No. 29		2.40
No. 30		2.50

Galvanized Sheets of Black Sheet Gauge.

	Cents per lb.
Nos. 10 and 11	2.50
No. 12	2.60
Nos. 13 and 14	2.60
Nos. 15 and 16	2.75
Nos. 17 to 21	2.90
Nos. 22 and 24	3.05
Nos. 25 and 26	3.20
No. 27	3.35
No. 28	3.50
No. 29	3.65
No. 30	3.80

Pittsburgh

PITTSBURGH, PA., January 14, 1913.

Conditions in the steel trade are most satisfactory to the mills and promise to continue so for some months. The most favorable feature of the market is the way that new demand is holding up, which has been much heavier this month than expected. There is a steady flow of specifications to the mills, with urgent requests for prompt shipments, showing that material is going into actual consumption, while new inquiries are coming out from consumers that the mills thought were filled up for the next two or three months or longer. The American Sheet & Tin Plate Company advanced prices to-day \$2 a ton on sheet mill products, and it and other leading sheet makers have their output pretty well sold up for first half. Heavy purchases of Bessemer iron by a local interest have stirred up the pig iron market to some extent, which has been rather dull for several weeks. The famine in billets and sheet bars is getting worse, and repeated attempts of producers to buy steel on the outside are not successful. Prices on finished material are very strong, five or six of the leading steel concerns in this district reporting more actual orders on their books than ever before, in their history. The opinion is general that prices on pig iron, steel, and most lines of finished material are amply high and should be kept where they are if possible. The pig iron makers assert that coke is entirely too high, and unless it comes down soon it will hurt the pig iron market. The weak point in the whole situation is scrap, which is dull, with prices weak.

Pig Iron.—Last week an accident happened to No. 5 Eliza furnace of the Jones & Laughlin Steel Company in this city, and it has been blown out for repairs which will take six weeks or two months. It makes 500 tons a day, and, to replace this the company has bought from 30,000 to 40,000 tons of Bessemer iron for delivery over January, February and March to its South Side works in this city, the price of \$17.25 at Valley furnace being paid for most of the iron, while for a small part \$17.35 was given. It is probable that the company will buy additional Bessemer iron this week for first quarter, providing more iron can be had, but that grade is very scarce, the furnaces that make it being pretty well sold up for such delivery. The Pittsburgh Steel Foundry Company bought last week 3000 to 4000 tons of basic iron for reasonably prompt delivery at \$16.35, Valley furnace, or \$17.25 delivered Glassport, Pa. On consideration of this transaction and also the recent sale of 30,000 tons of basic to the Pittsburgh Steel Company at \$16.35, we now quote the basic market at \$16.35 to \$16.50, Valley furnace, but note that some sellers refuse to shade \$16.50, while one or two are asking as high as \$17. There is a moderate movement in foundry iron for delivery in first quarter. The whole pig iron market, with the possible exception of basic, is strong. We quote standard Bessemer iron for first half delivery at \$17.25; basic, \$16.35 to \$16.50; No. 2 foundry, \$17.50 to \$18; malleable Bessemer, \$17 to \$17.25; and gray forge, \$16.25 to \$16.50, all at Valley furnace, the freight rate for delivery in the Pittsburgh district being 90c. a ton.

Steel Billets.—The shortage of steel that exists all over the country is getting more acute, and large makers of steel are scouring the country trying to buy billets and sheet bars but without success. The Carnegie Steel Company is very short and has been for months, and is understood to be willing to pay good round prices to get it. While it is true that most consumers are covered by contracts, they are not getting satisfactory deliveries, and frequently have to come in the market and buy some steel to help out. Several sales of open hearth sheet bars are reported to have been made at close to \$30, Pittsburgh, and there is said to be a standing offer of \$29 for open-hearth billets for reasonably prompt delivery. Hardly enough steel is being sold on account of its scarcity to fix actual prices ruling, and we quote nominally as follows: Bessemer billets, \$28.50 to \$29; Bessemer sheet bars, \$29 to \$30.50; open-hearth billets, \$29 to \$29.50 and open-hearth sheet

bars, \$29.50 to \$30, f.o.b. mill, Pittsburgh or Youngstown. Forging billets are \$36 to \$37 and axle billets \$34 to \$35, Pittsburgh.

Ferroalloys.—The new demand for ferromanganese is quiet, but occasionally a consumer comes in the market for a carload or two to help out on account of delayed deliveries. We note a sale of a carload of 80 per cent. German ferromanganese at \$70, another car at \$73, and a car of 80 per cent. English at \$75 Baltimore, for prompt shipment. We quote 80 per cent. German or English ferromanganese for first half delivery at \$65 to \$70, while for second half the market seems firm at \$65, Baltimore. We quote 80 per cent. for prompt shipment at \$70 to \$75, Baltimore, the freight rate to Pittsburgh district being \$1.95 a ton. We quote 50 per cent. ferrosilicon, in lots up to 100 tons, at \$75; over 100 tons to 600 tons, \$74; over 600 tons, \$73, Pittsburgh. We quote 10 per cent. at \$24; 11 per cent., \$25; 12 per cent., \$26, f.o.b. cars at furnace, Jackson, Ohio, or Ashland, Ky. We quote ferro-titanium at 8c. per lb. in carloads; 10c. in 2000-lb. lots and over and 12½c. in lots up to 2000 lb.

Steel Rails.—The buying of standard sections seems to be over for the time being, but it is said that the mills have specifications on hand for practically all of the heavy rails that have been sold for first half delivery. Another buying movement in rails for second half delivery is expected a little later. The new demand for light rails is active and the Carnegie Company received new orders and specifications in the past week for over 5000 tons. We quote splice bars at 1.50c. per lb., and standard section rails at 1.25c. per lb. Light rails are quoted as follows: 25, 30, 35, 40 and 45-lb. sections, 1.25c.; 16 and 20-lb., 1.30c.; 12 and 14-lb., 1.35c., and 8 and 10-lb., 1.40c., all in carload lots, f.o.b. Pittsburgh.

Wire Rods.—There is a fair amount of new inquiry but most consumers of rods have covered for the next six months and specifications are coming in freely. One leading maker has not sold any rods in the open market for some months, needing its entire output for its own wire mills and for contracts from regular customers booked some time ago. We quote Bessemer, open hearth and chain rods at \$31, Pittsburgh.

Muck Bar.—Inquiry is dull but, on the other hand, very little muck bar is being offered for sale. We quote best grades, made from all pig iron, at nominally \$31, delivered to buyers' mills in the Pittsburgh district.

Skelp.—No recent sales have been made, but the mills have their output well sold up for first quarter and the market is firm. We quote grooved skelp at 1.45c. to 1.50c.; sheared steel skelp, 1.50c. to 1.55c.; grooved iron skelp, 1.75c. to 1.80c.; sheared iron skelp, 1.85c. to 1.90c., delivered at buyers' mills in the Pittsburgh district.

Plates.—Two of the local steel car companies state that the Harriman order for 12,600 cars has not yet been actually placed, while on the other hand information comes from a reliable source that a good part of all of this order has been divided between the Western Car & Foundry Company and the Bettendorf Axle Company, in Iowa. It is known that the Harriman interests have a preference for the steel underframes made by the Bettendorf Company. The Cambria Steel Company has taken an order for another 1000 steel hopper cars for the Baltimore & Ohio, making a total of 2100. Active inquiries include 3000 steel hoppers for the Chesapeake & Ohio, 2000 to 3000 steel hoppers and gondolas for the Norfolk & Western and 1500 steel coal cars for the Wheeling & Lake Erie. The Duluth, Missabe & Northern has ordered 1000 steel ore cars from the Western Car & Foundry Company and the Duluth & Iron Range has divided the purchase of 1000 steel ore cars between the American Car & Foundry Company, 200, and the Standard Steel Car Company, 800. All the leading plate mills have their output sold up for practically the next six months, and are taking orders for shipment at convenience of the mill, which means in May or June, and probably not before July. With orders already on its books and those that will come to it in the natural course of business, the Carnegie Company is practically sold up on plates for the entire year. We quote ¼-in. and heavier tank plates at 1.45c. to 1.50c., Pittsburgh, for delivery at convenience of the mill, which would be not before second quarter and possibly third quarter, while for delivery in four to six weeks from 1.55c. to 1.60c. is quoted, and for shipment in two weeks, 1.75c. to 1.80c. can be had.

Structural Material.—Inquiry has been more active. The American Bridge Company has taken about 7000 tons for a steel building to be erected in a Western city; the Riverside Bridge Company, Martins Ferry, Ohio, 2500 tons of bridge work for the New York, New

Haver & Hartford Railroad; the Eastern Steel Company, about 2700 tons for an additional building for the Institute of Arts and Sciences in Brooklyn, N. Y., and a small bridge for the Pennsylvania Lines West, about 100 tons; the McClintic-Marshall Construction Company, about 500 tons for the General Electric Company at Lynn, Mass.; the Blaw Steel Construction Company, 3000 tons of galvanized transmission towers for the Pearson Engineering Corporation of New York City, for shipment to Spain, 200 tons of galvanized transmission towers for Stone & Webster for shipment to Keokuk, Iowa, two steel viaducts for the West Penn Railroad to be built near Scottdale, Pa., steel form contract for the New York subway construction and steel form contract for a Pennsylvania Railroad bridge near Baltimore, Md. We quote beams and channels up to 15-in. at 1.45c. to 1.50c., for delivery at the convenience of the mill, while small lots for delivery in two to four weeks are bringing from 1.75c. to 2c. or higher.

Car Wheels.—Railroads are placing orders freely for both steel and cast iron wheels and prices are strong. The Carnegie Company has the output of its Schoen steel car wheel works at McKees Rocks sold up for some months. We quote 33-in. wheels for freight service at \$15 to \$15.50 and 36-in. for passenger cars at \$19 to \$19.50 per wheel, f.o.b. Pittsburgh.

Iron and Steel Bars.—The new demand for both iron and steel bars is much heavier than the mills thought it would be at this time, in view of the very heavy buying in the fall months. The favorable weather has permitted outdoor building operations to be carried on without interruption, and this has led to a much heavier consumption of steel bars than otherwise would have been the case. The leading steel bar mills have their output about sold up for first half and have a good deal of tonnage sold for third and fourth quarter delivery. Conditions among the iron bar mills are more active than they have been for some years. We quote merchant steel bars at 1.40c. to 1.45c. for delivery at convenience of the mill, while for fairly prompt shipment 1.60c. to 1.75c. is paid by consumers. We quote iron bars at 1.70c. to 1.75c. for reasonably prompt shipment. Mills charge \$1 extra per ton for twisting 1/4-in. and larger steel bars and \$2 extra for 1/2 to 3/4 in.

Sheets.—Effective Tuesday, January 14, the American Sheet & Tin Plate Company advanced prices on sheet mills products \$2 a ton, its minimum prices from that date on blue annealed sheets being 1.75c. for No. 10 gauge; 2.35c. for No. 28 black sheets; 3.50c. for No. 28 galvanized, and 2.30c. for No. 28 tin mill black sheets. A month or more ago, the La Belle Iron Works advanced its prices to these figures and several others have since taken the same action, so that the market can now be fairly said to be based on the above prices. While two or three have not yet adopted the new prices, they will no doubt do so in the next two or three days. The new demand for sheets continues heavy and specifications continue to pour into the mills at an unprecedented rate. The leading makers have their output to July 1 pretty well sold, but have not yet opened their books for third and fourth quarter delivery. It is stated, however, that some orders at the new prices have been placed with several mills for shipment at their convenience, which will probably be not before third quarter.

Tin Plate.—The dull season has not yet ended, but specifications against contracts are fair. A good part of the tin plate that will be made this year is already under contract but the salmon canning industry has not so far covered its entire wants. Operations of mills have been cut down materially lately, but they will be increased in the near future. The market is reported firm on the basis of \$3.60 for 100-lb. cokes and \$3.45 for 100-lb. ternes, f.o.b. Pittsburgh.

Spelter.—The market is slightly stronger, and the new demand is reported a little better. We quote prime grades at 7.17 1/4c. East St. Louis, equal to 7.30c. Pittsburgh.

Railroad Spikes.—Most of the railroads and boat builders have covered their entire requirements for spikes up to July 1. Specifications are coming in freely and all the makers are reported back in deliveries two to three months or longer. We quote railroad spikes in base sizes, 5 1/2 x 9/16 in., at \$1.90, and small railroad and boat spikes at \$1.90 and \$2 per 100 lb., f.o.b. Pittsburgh, for forward delivery. Small spikes have sold as high as \$2.25 for prompt shipment.

Hoops and Bands.—The Carnegie Steel Company has issued a new card of extras on steel hoops on which slight advances have been made on some of the lighter

gauges. The demand for hoops and bands is only fairly active, consumers, being covered for the next six months, specifying freely. We quote steel bands at 1.45c. to 1.50c., with extras as per the steel bar card, and steel hoops at 1.60c. to 1.65c. f.o.b. Pittsburgh, these prices being on orders for shipment at convenience of the mills.

Shafting.—The new demand is quiet, most consumers having covered their needs to July 1. Specifications against contracts are coming in freely. We quote cold rolled shafting at 58 per cent. off in carload and larger lots and 53 per cent. off in less than carload lots, delivered in base territory.

Merchant Steel.—The demand is more active than had been expected, as this is always the dull season. A good deal of tonnage is being placed in new orders and consumers are specifying freely against contracts. One mill reports its December shipments to have been larger than in any December in its history. Prices are very firm. We quote: Iron finished tire, 1 1/2 x 3/4 in. and larger, 1.40c. to 1.55c., base; under 1 1/2 x 3/4 in., 1.55c. to 1.65c.; planished tire, 1.60c. to 1.70c.; channel tire, 3/4, 7/8 and 1 in., 1.90c. to 2c.; 1 1/8 in. and larger, 1.80c. to 1.90c.; toe calk, 2c. to 2.10c., base; flat sleigh shoe, 1.50c. to 1.65c.; concave and convex, 1.80c. to 1.90c.; cutter shoe, tapered or bent, 2.30c. to 2.40c.; spring steel, 2c. to 2.10c.; machinery steel, smooth finish, 1.80c. to 1.85c. We quote cold rolled strip steel as follows: Base rates for 1 in. and 1 1/2 in. and wider, under 0.20 carbon, and No. 10 and heavier, hard temper, 3.30c.; soft, 3.55c.; coils, hard, 3.20c.; soft, 3.45c.; freight allowed. The usual differentials apply for lighter gauges and sizes.

Merchant Pipe.—So far this month the mills have taken more orders and for larger tonnage than in the first half of December, the new demand continuing heavy. Some large contracts for line pipe have been placed and others are being figured on. The National Tube Company has taken 100 miles of 20-in. to be furnished to a natural gas company, the line to be laid in the Pittsburgh district. The order involves about 20,000 tons. The order of the Columbia Gas & Electric Company, one of the Standard Oil Company interests, for 180 miles of 12-in. pipe, which has been in the market for several weeks, is reported to have been placed with a Youngstown mill, but this has not been officially confirmed. The Ohio Fuel Supply Company has placed orders for about 20 miles of 3-in. to 5-in. and is reported to be in the market with another large inquiry. The continued advances in prices of crude oil have brought about a heavier demand for casing, recent orders including 12 miles of 6-in., 5 miles of 10-in. and 4 miles of 8-in. There is some talk of an early advance in prices of pipe which is said to be the cheapest item on the whole list of finished material at present, based on the higher cost of raw material.

Boiler Tubes.—While many consumers of locomotive and merchant tubes have covered their requirements for the first six months of this year, buying continues active and orders placed with the mills this month are heavier than in the first half of December. One or two makers are said to be quoting discounts one or two points shorter (higher) than the new list.

Bolts and Rivets.—The demand is active but not so heavy as some time ago, consumers being pretty well covered for first half. They are specifying freely against contracts. Most makers have their output sold for three or four months or longer. Prices are firm. We quote button head structural rivets at \$2.20 and cone head boiler rivets at \$2.30 per 100 lb. The discounts on bolts are as follows, in lots of 300 lb. or over, delivered within a 20c. freight radius of maker's works:

Coach and lag screws.....	80 and 10% off
Small carriage bolts, cut threads.....	75 and 5% off
Small carriage bolts, rolled threads.....	75 and 10% off
Large carriage bolts.....	70% off
Small machine bolts, rolled threads.....	75, 10 and 5% off
Small machine bolts, cut threads.....	75 and 10% off
Large machine bolts.....	70 and 7% off
Machine bolts with C.P.C. and T nuts, small.....	75 and 5% off
Machine bolts with C.P.C. and T nuts, large.....	70% off
Square hot pressed nuts, blanked and tapped.....	\$5.70 off list
Hexagon nuts.....	\$6.30 off list
C.P.C. and R. square nuts, tapped and blank.....	\$5.70 off list
Hexagon nuts 3/4 and larger.....	\$6.60 off list
Hexagon nuts smaller than 3/4.....	\$7.20 off list
C.P. plain square nuts.....	\$5.20 off list
C.P. plain hexagon nuts.....	\$5.50 off list
Semi-finished hexagon nuts 3/4 and larger.....	85% off
Semi-finished hex. nuts smaller than 3/4.....	85 and 10% off
Rivets, 7/16 x 6 1/2, smaller and shorter.....	75, 10 and 10% off
Rivets, metallic tinned, bulk.....	3 1/2c. per lb. net extra
Rivets, tin plated, bulk.....	1 1/2c. per lb. net extra
Rivets, metallic tinned, packages.....	70, 10 and 10% off

Wire Products.—While the new demand is not strong, makers state that specifications are coming in well and their shipments this month will be heavy. A

larger demand is expected when jobbers commence to specify for spring trade in wire and wire nails, which will probably be in February. Prices are reported as being strongly held. We quote wire nails at \$1.75 per keg; cut nails, \$1.70 per keg; galvanized barb wire, \$2.15 per 100 lb.; painted, \$1.75; annealed fence wire, \$1.55, and galvanized fence wire, \$1.95, f.o.b. Pittsburgh, usual terms, freight added to point of shipment. Jobbers charge the usual advances for small lots from store.

Coke.—Inquiry is quiet, but the market is firm. We note sales of 7000 to 8000 tons of prompt furnace coke at \$4.10 and 3000 tons at \$4.05, per net ton at oven. Several furnace companies in the Central West have not yet covered for their supply for first half, but will buy from month to month, expecting prices to decline. Standard makes of blast furnace coke for delivery over first half are held strong at \$3.25 to \$3.50, two leading interests refusing to shade \$3.50 at oven. Standard makes of 72-hour foundry coke for spot shipment are held at \$4.50 to \$4.75, and a sale of two cars a week through this month and February is reported at \$4.50 at oven. On contracts for first half, standard makes of 72-hour foundry coke are held at \$3.75 to \$4 per net ton at oven. The output of coke is holding up well, the Upper and Lower Connellsville regions, according to the Connellsville Courier, having turned out last week 384,204 net tons, an increase over the previous week of 25,199 tons.

Iron and Steel Scrap.—The supply for the last two or three months seems to have been heavier than consumption, with the result that there is an overstocked market and prices all along the line are weak. The embargo on scrap routed for the Pittsburgh Steel Company, Monessen, Pa., is still on and this has thrown much material on the market, helping to further depress prices. While prices are abnormally low, no improvement is in sight. Dealers report that it is very hard to sell material, all consumers having what they will need for some time. Prices on heavy steel, low phosphorus, borings and turnings are particularly weak. The scrap lists of the Pennsylvania Railroad and the Pennsylvania Lines West closed last week, and it is understood that few bids went in from dealers in this city, as they do not want to take in more until they are able to dispose of what they have on hand. The Baltimore & Ohio list closed January 13, and the Norfolk & Western list will close January 16. We note sales of 500 tons of selected heavy steel scrap at \$15.25 and 800 to 1000 tons at \$15.40, delivered Monessen; 1000 tons of cast-iron borings at about \$10.50 delivered, and about 1000 tons of low phosphorus plate shearings at \$17.50 delivered. Dealers quote, per gross ton, as follows:

Heavy steel scrap, Steubenville, Follansbee, Brackenridge, Sharon, Monessen and Pittsburgh delivery	\$15.00 to \$15.25
No. 1 foundry cast	14.50 to 14.75
No. 2 foundry cast	13.50 to 13.75
Bundled sheet scrap, f.o.b. consumers' mills, Pittsburgh district	13.00 to 13.25
Re-rolling rails, Newark and Cambridge, Ohio, Cumberland, Md., and Franklin, Pa.	16.25 to 16.50
No. 1 railroad malleable stock	14.25 to 14.50
Grate bars	10.75 to 11.00
Low phosphorus melting stock	17.50 to 17.75
Iron car axles	24.25 to 24.75
Steel car axles	17.75 to 18.00
Locomotive axles, steel	21.75 to 22.00
Locomotive axles, iron	27.75 to 28.00
No. 1 busheling scrap	14.25 to 14.50
No. 2 busheling scrap	9.75 to 10.00
Old car wheels	15.75 to 16.00
*Cast iron borings	10.50 to 10.75
*Machine shop turnings	10.75 to 11.00
†Steel bar crop ends	16.50 to 16.75
Old iron rails	16.25 to 16.50
No. 1 railroad wrought scrap	15.00 to 15.25
Heavy steel axle turnings	12.75 to 13.00
Stove plate	10.75 to 11.00

*These prices are f.o.b. cars at consumers' mills in the Pittsburgh district.
†Shipping point.

Chicago

CHICAGO, ILL., January 15, 1913.—(By Telegraph.)

The railroads are still offering new business much in excess of the mill supply available. Since the first of the year they have been specifying to cover their requirements throughout the entire first half. This anticipation has brought the specification tonnages of the first two weeks of the year practically up to the level of any similar period in 1912. One railroad alone ordered 42,000 kegs of spikes and bolts. New projects for the spring months in building lines are being held in abeyance pending the first opportunity to proceed. Such work as can be done has been made possible only

by the unusually heavy ordering of structural shapes in stock lengths by fabricators last fall; this material is just now being delivered. The bar iron situation, in view of the low price of scrap, is particularly favorable to the mills, to which, in addition, new business is offering freely. The Illinois Central Railroad has just effected the purchase of approximately 6000 tons of iron bars. Although both local and Southern furnaces appear to be well sold up for the first quarter and to a great extent for the first half, the absence of buying in the past several weeks has not been entirely without effect. In some instances the anxiety to sell iron has brought out minor concessions in price. For Northern iron the inquiry is now improving and melters are apparently considering their needs for the second quarter and second half.

Pig Iron.—A number of inquiries for Northern pig iron covering melters' requirements through the first half and some through the second half are current. One of these, from a Milwaukee manufacturer, is for 1500 tons. There is likewise a much better inquiry for charcoal iron. Current business is largely in the nature of filling-in orders in carload and slightly larger lots. The quotation of \$18 f.o.b. furnace is the prevailing figure for No. 2 local foundry, and with a resumption of buying would be a firm minimum. The pressure of a dull market has, however, brought out some concessions from that price. Melters of Southern iron state that it can be obtained on a basis of \$13.50, Birmingham, but there is no evidence that this is an open market. Certain grades are obtainable at that price, but others of the important producers are well sold up for the entire first half and are asking full prices for what they have to sell. The more severe weather has strengthened the position of spot shipment Southern iron and a number of cars have been disposed of at \$14, with no apparent necessity for shading. A small shipment of No. 2 Virginia iron, delivered at East Moline, brought \$19.60. The following quotations are for iron delivered at consumers' yards except those for Northern foundry, malleable Bessemer and basic iron, which are f.o.b. furnace and do not include a local switching charge averaging 50c. per ton:

Lake Superior charcoal, Nos. 1, 2, 3, 4....	\$18.00 to \$18.75
Northern coke foundry, No. 1.....	18.50 to 18.75
Northern coke foundry, No. 2.....	18.00 to 18.25
Northern coke foundry, No. 3.....	17.50 to 18.00
Southern coke, No. 1 foundry and No. 1 soft	18.85 to 19.35
Southern coke, No. 2 foundry and No. 2 soft	18.35 to 18.85
Southern coke, No. 3.....	17.85 to 18.35
Southern coke, No. 4.....	17.35 to 17.85
Southern gray forge	17.35 to 17.85
Southern mottled	16.85
Malleable Bessemer	18.00 to 18.25
Standard Bessemer	19.40 to 19.90
Basic	17.75 to 18.25
Jackson Co. and Kentucky silvery, 6 per cent.....	20.40
Jackson Co. and Kentucky silvery, 8 per cent.....	21.40
Jackson Co. and Kentucky silvery, 10 per cent.....	22.40

Rivets and Bolts.—The demand for bolts and nuts has been well maintained and weaknesses that appeared some time ago are reported as less prevalent. Specifications for rivets are likewise heavier. We quote from mill as follows: Carriage bolts up to $\frac{3}{4}$ x 6 in., rolled thread, 75-10; cut thread, 75-5; larger sizes, 70-2 $\frac{1}{2}$; machine bolts up to $\frac{3}{4}$ in. x 4 in., rolled thread, 75-10-5; cut thread, 75-10; large sizes, 70-7 $\frac{1}{2}$; coach screws, 80-10; hot pressed nuts, square head, \$5.70 off per cwt.; hexagon, \$6.30 off per cwt. Structural rivets, $\frac{3}{4}$ to 1 $\frac{1}{4}$ in., 2.38c., base, Chicago, in carload lots; boiler rivets, 0.10c. additional.

Following the advance on machine bolts from mill, store prices are expected to be immediately higher. For the present out of store we quote for structural rivets, 2.70c., and for boiler rivets, 2.90c. Machine bolts up to $\frac{3}{4}$ x 4 in., 70-7 $\frac{1}{2}$; larger sizes, 65-5, carriage bolts up to $\frac{3}{4}$ x 6 in., 70-5; larger sizes, 65 off. Hot pressed nuts, square head, \$5.30, and hexagon, \$5.90 off per cwt.

Wire Products.—The movement of wire nails to jobbers and to Southern territory is surprisingly heavy. Other lines, with the exception of plain wire for the requirements of manufacturers, are not especially active. The mills, however, are running at a maximum rate. We quote as follows: Plain wire, No. 9 and coarser, base, \$1.73; wire nails, \$1.93; painted barb wire, \$1.93; galvanized, \$2.33; polished staples, \$1.93; galvanized, \$2.33, all Chicago.

Cast Iron Pipe.—The city of Detroit is in the market for 3800 tons. The leading interest was the successful bidder for 500 tons at Kalamazoo, and 300 tons at Burlingame, Kan., was also let. When bids were opened January 2 at Portland, Ore., for 6000 tons of water pipe and 225 tons of special castings, it was found that the low bidders were the Oregon Iron & Steel Company on the pipe and the Phoenix Iron Works,

For the specials. It is expected that the board will award the contracts to the local bidders. We quote as follows, per net ton, Chicago: Welded pipe, 4 in., \$31; 6 to 12 in., \$29; 16 in. and up, \$28, with \$1 extra for gas pipe.

Old Material.—With scrap being offered very freely and local melters having little occasion to buy, the market is quite as weak as at any time, and various items sold at the minimum prices last quoted. Some improvement in the congested car handling condition is promised for the near future, but stocks in yards of local consumers are so large that little can be hoped for in the way of an immediate strengthening in prices. There is some demand for foundry grades of scrap, which are accordingly firmer than mill grades. We quote for delivery at buyers' works, Chicago and vicinity, all freight and transfer charges paid, as follows:

Per Gross Ton.	
Old iron rails	\$17.25 to \$17.75
Old steel rails, rerolling	16.25 to 16.75
Old steel rails, less than 3 ft.	14.50 to 15.00
Relaying rails, standard section, subject to inspection	24.00
Old car wheels	17.00 to 17.50
Heavy melting steel scrap	12.75 to 13.00
Frogs, switches and guards, cut apart	12.75 to 13.00
Shoveling steel	12.50 to 12.75
Steel axle turnings	11.00 to 11.50
Per Net Ton.	
Iron angles and splice bars	\$16.00 to \$16.50
Iron arch bars and transoms	16.50 to 17.00
Steel angle bars	12.50 to 13.00
Iron car axles	21.50 to 22.00
Steel car axles	18.50 to 19.00
No. 1 railroad wrought	12.75 to 13.25
No. 2 railroad wrought	12.25 to 12.75
Cut forge	12.25 to 12.75
Steel knuckles and couplers	12.75 to 13.25
Steel springs	13.25 to 13.75
Locomotive tires, smooth	14.00 to 14.50
Machine shop turnings	8.00 to 8.50
Cast and mixed borings	7.00 to 7.50
No. 1 busheling	11.25 to 11.75
No. 2 busheling	8.50 to 9.00
No. 1 boilers, cut to sheets and rings	9.50 to 10.00
Boiler punchings	12.50 to 13.00
No. 1 cast scrap	13.00 to 13.50
Stove plate and light cast scrap	10.75 to 11.25
Railroad malleable	13.50 to 14.00
Agricultural malleable	12.00 to 12.50
Pipes and flues	9.75 to 10.25

(By Mail)

Rails and Track Supplies.—Indications are that the railroads have still ahead of them an expansion in construction work and equipment that will continue to make them the most important factor in buying throughout this year as well as last, under favoring conditions. Many thousands of tons of material are now offering to the mills that they are not able to take. Railroads are sending in specifications covering the first half and ordering of this character made the first week in January almost as large in the matter of specifications as any last year. Track fastenings in particular are being specified freely, one road ordering last week 30,000 kegs of spikes and 12,000 kegs of bolts. We quote standard railroad spikes at 1.95c. to 2.05c., base; track bolts with square nuts, 2.30c. to 2.40c., base, all in carload lots, Chicago; tie plates, \$32 to \$34.50 net ton; standard section Bessemer rails, Chicago, 1.25c., base; open hearth, 1.34c.; light rails, 25 to 45 lb., 1.25c.; 16 to 20 lb., 1.30c.; 12 lb., 1.35c.; 8 lb., 1.40c.; angle bars, 1.50c., Chicago.

Plates.—Little improvement can be found in the general situation as regards plates. The small buyer can pick up a carload at intervals and obtain delivery in four weeks by paying a premium but for the most part is dependent on warehouse stocks. Car specifications are heavy and new business includes 1000 cars for the New York Central Lines and 1000 for the Chicago, Rock Island & Pacific. We quote for Chicago delivery, mill shipment, 1.63c.

Warehouses are handling their heavy business with dispatch and are generally able to meet all the demands upon them. We quote from Chicago store on base sizes, 2.05c.

Sheets.—With the exception of blue annealed sheets, on which a local mill is offering deliveries of from three to six weeks, there is little to denote increasing easiness in the sheet market. New business being placed here is being taken almost entirely by Eastern mills. The local sheet mill, which has recently introduced a sheet steel barrel, is receiving a rapidly increasing response in the form of orders for both domestic and export shipment. We quote for Chicago delivery in carloads from mill: No. 28 black sheets, 2.43c. to 2.53c.; No. 28 galvanized, 3.58c. to 3.68c.; No. 10 blue annealed, 1.83c. to 1.88c.

We quote for sheets out of store: No. 10 blue annealed, 2.25c.; No. 28 black, 2.80c.; and No. 28 galvanized, 4.05c.

Structural Material.—The contracts for fabricated structural material reported the past week aggregated 4574 tons and included the Metropolitan Building at Los Angeles, 1685 tons, awarded to the American Bridge Company; Portland Trust Company Building, Portland, Ore., 1300 tons, placed with the Minneapolis Steel & Machinery Company; 682 tons for the Carls-ton-Snyder Building, Oakland, Cal., to Dyer Bros.; 463 tons for a Denver & Rio Grande viaduct, to the Milwaukee Bridge Company; 229 tons for Tidewater Southern bridges, to the American Bridge Company, and 215 tons for a Mead-Morrison Mfg. Company coal handling bridge to the Minneapolis Steel & Machinery Company. The wisdom of those fabricators who were persuaded to order last fall unusually heavy tonnages of shapes in stock sizes has been amply demonstrated in the past few days. The securing of a large building job demanding erection before midsummer was made possible to a local fabricator by reason of material just now being shipped from mill on the order for stock last fall. There is no change in the mill situation as to deliveries. We quote for Chicago delivery, mill shipment, plain shapes, 1.63c.

Structural shapes continue to be bought from warehouse stocks in surprisingly heavy volume. Where the material specified requires cutting to short lengths, 3 ft. and less, it is not only advantageous to obtain the steel from store because of the prompt shipment, but the extras charged by the mill for such cuttings are avoided, the warehouse doing that work without charge. Deliveries have been appreciably retarded, however, by the amount of this cutting and jobbers are seeking a correction by limiting cutting specifications. We quote from store on base sizes, 2.05c.

Bars.—The present unique condition, in which the price of scrap is disproportionately low compared with price of bar iron, creates an unusually comfortable situation for the maker of iron bars. This is supported by a continuance of new business and specifications sufficient to firmly establish current quotations. The Illinois Central Railroad has just completed the distribution of orders aggregating between 5000 and 6000 tons. Occasional inquiry appears with reference to the steel bar situation as affecting the implement interests, and indications are that contracting will bring out no prices not now current. We quote for mill shipment as follows: Bar iron, 1.57½c. to 1.60c.; soft steel bars, 1.58c. to 1.65c.; hard steel bars, 1.60c. to 1.70c.; shafting in carloads, 60 per cent. off; less than carloads, 55 per cent. off.

For delivery from store, we quote soft steel bars, 1.95c.; bar iron, 1.95c.; reinforcing bars, 1.95c. base with 5c. extra for twisting in sizes ¾ in. and over, and 7½c. extra for smaller sizes; shafting 33 per cent. off.

Philadelphia

PHILADELPHIA, Pa., January 14, 1913.

An undercurrent of weakness has developed in the pig iron market, but considerable inquiry is in the market and the condition will, it is believed, be but temporary. Finished material continues strong. Several Eastern plate and shape makers have opened order books for second quarter, some asking advances. Maximum production continues, with deliveries becoming more delayed. Billet inquiries are numerous and include renewed tenders of orders for export. The volume of prospective work in fabricated material is increasing. Premiums continue to be paid for prompt iron and steel bars. Coke remains quiet, with a tendency toward lower prices in some furnace grades. The old material market is spotty, with prices irregular.

Iron Ore.—Business under negotiation moves slowly and no important sales are reported. Importations during the week include 5950 tons from Newfoundland, 14,390 tons from Spain, 14,919 tons from Sweden and 9500 tons from Cuba.

Pig Iron.—Buying against the recent inquiry for 7500 tons of low grade iron by a Delaware River pipe maker, for second quarter, has been the most important business of the week. Orders were placed among a number of sellers usually in 1000-ton lots, including Pennsylvania, Virginia and Southern iron, at prices ranging close to \$17.50 delivered for forge and \$17.75 for No. 3 foundry. At least one other pipe maker has been considering the purchase of low grade iron, although no definite quantity is named, nor have any important sales been reported. In the higher foundry grades new business has been confined to small lots, usually to piece out requirements; few definite inquiries of any size for second quarter or more extended delivery have appeared. The lack of demand in this direction has resulted in an appearance of weakness, although no concessions are reported for standard brands, which remain firm at \$18.50 minimum for east-

ern Pennsylvania No. 2 X foundry. The blowing in of several small furnaces recently has resulted in a larger supply of so-called non-standard brands, usually sold at a differential of 25c. a ton. Considerable inquiry for small lots of special analysis iron for first quarter is noted, also charcoal and malleable grades. One inquiry for upward of 1000 tons of coke malleable is out. Few large sales of Virginia iron have been made in this district, although moderate lots for New England delivery are moving at \$16, at furnace, for first quarter and \$15.50 for second quarter, as well as \$15.75 for first half shipment. Small sales of Southern iron have been made on the basis of \$14 and \$14.50, Birmingham, for No. 2 foundry. While there has been no movement in rolling mill forge a large producer-consumer in this district, who recently purchased upward of 20,000 tons, will come into the market for a like quantity in about two weeks. There is no demand for basic iron; consumers are covered for first quarter, and offers of round lots of standard basic at \$18, delivered at Eastern mills in the second quarter, have not resulted in orders. Low phosphorus pig continues in active demand, one inquiry for 1000 tons, together with smaller lots, being noted. This grade is scarce and firm at \$24.50, delivered in this district. Producers of pig iron generally note a decline in orders, although deliveries against contracts are fully maintained and in many cases shipment is being urged by consumers, whose stocks are relatively low. Prices for standard brands remain unchanged, the following range being named for first quarter and half, delivered in buyers' yards in this district:

Eastern Pennsylvania No. 2 X foundry....	\$18.50 to \$18.75
Eastern Pennsylvania No. 2 plain.....	18.25 to 18.50
Virginia No. 2 X foundry.....	18.80 to 19.00
Virginia No. 2 X foundry, first half.....	18.55 to 19.00
Virginia No. 2 plain.....	18.55 to 18.75
Gray forge.....	17.75
Basic.....	18.00 to 18.25
Standard low phosphorus.....	24.50

Ferroalloys.—Small sales of 80 per cent. ferromanganese have been made at \$70, seaboard, for prompt delivery, representing a decline of \$5 a ton. Forward ferromanganese is still held at \$65, although no sales are reported. Deliveries on contracts have been coming in much more freely, over 1500 tons arriving at this port last week. The market for ferrosilicon, either 50 per cent. or furnace grades, has been quiet and prices remain unchanged.

Billets.—Eastern makers are still receiving heavy inquiries for first and second quarter billets, but in the majority of cases are unable to accept the business. Western consumers are again active inquirers in this market and would take round lots if they could be had. A foreign inquirer, in the market a month or so ago, for 20,000 tons of steel, which was not placed, is again offering the business, but mills are not able to take it on. The principal producer is sold up tight for the first quarter and has little open for second quarter delivery. Prices are firm at \$32, delivered, for basic open hearth rolling billets, and \$36, at mill, minimum, for ordinary forging billets. Prompt deliveries command sharp premiums.

Plates.—Books have been opened in a limited way for second quarter by makers who have heretofore accepted orders for first quarter only, and contracts have been entered from regular customers at 1.75c. minimum, delivered in this district. A very good current demand for all classes of heavy plates continues and mills are operating at record rates, but still fall behind on promised deliveries. No particularly large contracts have been entered, although some large business is pending. Prices are firm with quotations for extended forward shipment by some sellers at 1.65c., delivered. Eastern mills quote 1.75c. for sheared and 1.80c. for universal plates, first and second quarter delivery in this district.

Structural Material.—A large volume of fabricated work has been moving and indications promise increased demands. One project under consideration involves 10,000 tons for a new building for the Public Ledger. Considerable moderate bridge business is also in sight. Contracts for the Metropolitan Building columns go to the leading interest. Several bridge orders, involving about 700 tons, have been placed. One maker of plain shapes, who heretofore has not been selling for forward delivery, has opened its books for second quarter and entered contracts at 1.80c., delivered here. For ordinary delivery 1.75c. can still be done, while prompt shipment, when available, commands up to 2c., delivered.

Sheets.—There is a sharp scarcity in prompt sheets, both Eastern and Western mills having their capacity for early shipment fully taken. Business comes out freely and mills are becoming more fully covered for

the first half of the year. Western No. 10 gauge blue annealed sheets are strong at 1.90c., delivered here, while Eastern mills making smooth, loose-rolled sheets readily obtain 2.05c. for early shipments.

Bars.—Fewer mills are willing to accept 1.67½c., delivered, for ordinary iron bars for near future delivery. For early shipment 1.77½c., delivered, is close to the minimum, while higher prices are frequently obtained for prompt shipment. A very fair volume of business is moving. There is a good demand for prompt steel bars at 1.85c., delivered, with contract bars at 1.55c. to 1.60c.

Coke.—Business has been largely confined to odd lot sales. In foundry grades prices are comparatively strong at about \$4.50 at oven. Sales of moderate lots of prompt Connellsville furnace coke have been made at \$4, although other grades are available at lower prices. Contract furnace coke is quoted at about \$3.25 at oven. The following range, per net ton, about represents the market for deliveries in buyers' yards in this district:

Connellsville furnace coke.....	\$5.00 to \$5.85
Connellsville foundry coke.....	5.85 to 6.50
Mountain furnace coke.....	4.50 to 5.00
Mountain foundry coke.....	5.60 to 6.10

Old Material.—The market is spotty and prices are somewhat irregular. Consumers of heavy melting steel are taking on very little material, mostly odd lots at inside prices. One purchase of 1500 tons at \$15, delivered, is noted. One large buyer in this district has withdrawn from the market. Orders covering upward of 5000 tons of low phosphorus scrap for export to Canada have been entered at prices equivalent to \$19.50 here. Little business in low phosphorus steel is moving. Borings and turnings continue in good demand. Wrought scrap is quiet, while stove plate is weak. Materials offered by railroads this month are reported to have brought comparatively good prices. The following range of prices about represents the market for deliveries in buyers' yards, in this district, covering eastern Pennsylvania and nearby points, taking a freight rate varying from 35c. to \$1.35 per gross ton:

No. 1 heavy melting steel.....	\$14.50 to \$15.00
Old steel rails, rerolling (nominal).....	17.00 to 17.50
Low phosphorus heavy melting steel scrap.....	19.00 to 19.25
Old steel axles.....	20.00 to 20.50
Old iron axles (nominal).....	26.00 to 27.00
Old iron rails.....	18.00 to 18.50
Old car wheels.....	16.25 to 16.75
No. 1 railroad wrought (nominal).....	16.25 to 16.75
Wrought iron pipe.....	13.25 to 13.75
No. 1 forge fire.....	13.00 to 13.50
No. 2 light iron (nominal).....	8.00 to 8.50
Wrought turnings.....	11.50 to 11.75
Cast borings.....	11.00 to 11.50
Machinery cast.....	15.00 to 15.50
Grate bars, railroad.....	11.00 to 11.50
Stove plate.....	11.00 to 11.50
Railroad malleable (nominal).....	13.50 to 14.00

J. K. Dimmick & Co., pig iron, coal and coke merchants, Land Title Building, will make application February 3 for incorporation under Pennsylvania laws under the name of J. K. Dimmick & Co., Inc.

Cleveland

CLEVELAND, OHIO, January 14, 1913.

Iron Ore.—The labor situation in the Lake Superior mining districts is beginning to cause some anxiety. There was a large exodus of men from mines to their native European countries last fall and as yet very few of these have returned. Some were called home by the Balkan war and others went back to visit, and owing to the generally satisfactory industrial condition throughout Europe at the present time it is believed that large numbers of these men have found employment at home and will not return to the mines. In spite of the fact that no work is done in the open pit properties in winter there is scarcity of men for the underground mines, and some of these, that would now be operated double shift, were enough men to be had, are being worked only single shift. The heavy shipments last season resulted in the cleaning up of about all the stockpiles and on this account underground mine owners are particularly anxious to crowd work during the winter. Unless the supply of labor becomes more abundant in the spring shipments may be curtailed so that they will not reach the expected 50,000,000-ton mark. No further ore sales or inquiries are reported. There is still some inquiry for vessel contracts for ore but not much boat capacity is being offered. We quote prices as follows: Old Range Bessemer, \$4.40; Mesaba Bessemer, \$4.15; Old Range non-Bessemer, \$3.60; Mesaba non-Bessemer, \$3.40.

Iron.—The market is not active but prices are firm. There is still a moderate demand for small lots of foundry grades for prompt and early shipment from foundries that have not covered for their requirements. These small lot sales are being made at \$17.50 to \$18, Cleveland, for No. 2. The largest sale reported is of 500 tons, one-half for prompt shipment and the remainder for the first half. No last half inquiries have as yet come out. A Marion, Ohio, consumer has asked for 400 tons of malleable iron. Ohio delivery iron is being offered at \$19 for 8 per cent. for delivery through the entire year. There is a scarcity of silvery iron for prompt shipment but this situation will be remedied in the spring when furnaces that have been out of blast for some time for repairs will be blown in. There is some inquiry for Southern iron in lots of around 200 tons for the first half, on which the general quotation is \$14, Birmingham, for No. 2. We note the sale of 150 tons of No. 2 Southern for prompt shipment at \$13.75. Foundries generally in this territory are well filled with work but they are able to make deliveries more promptly than they were a month ago. M. A. Hanna & Co. blew in their Fannie furnace at West Middlesex, Pa., January 9. For prompt shipment and for the first half we quote, delivered Cleveland, as follows:

Bessemer	\$18.15 to \$18.40
Basic	17.25 to 17.50
Northern No. 2 foundry	17.75 to 18.00
Southern No. 2 foundry	18.10 to 18.35
Gray forge	17.15 to 17.40
Jackson County silvery, 8 per cent. silicon	20.55

Finished Iron and Steel.—Inquiries which quieted down somewhat in the holiday season have become more active. There is considerable demand for lots of various sizes for specific structural and other work, delivery of which is wanted within the next two or three months. Buyers are having much trouble in getting material except at premium prices. Structural specifications are heavy, although not much new work is coming out. This demand is coming largely from fabricators who have placed very large stock orders so as to have material on hand when building work opens up in the spring. Steel bars are quoted at 1.40c. to 1.45c. and plates and shapes at 1.50c., Pittsburgh, for delivery at the convenience of the mills. One mill in the Pittsburgh district that unexpectedly has a limited amount of plates to sell for shipment in about two weeks is offering them at 1.60c. Eastern mills in some cases are able to get 1.75c. for structural material for early delivery in this territory, or \$2 a ton above their regular quotation. A considerable tonnage of merchant steel and bars was placed by jobbers in this territory in the week for second quarter delivery at 1.40c., base. Sheets are very firm and some mills are asking premium prices. On an inquiry for a round tonnage of galvanized sheets for future delivery one Ohio mill has quoted as high as 3.60c. Prices on bar iron are firm at a minimum quotation of 1.60c., Cleveland mill. Hard steel bars are quoted at 1.45c. to 1.50c. Prices on hard steel angles have been advanced to 1.65c. Jobbers are complaining because of inability to take mill orders, because many mills have nothing to sell. Some rail inquiries are pending, including one from a Michigan traction line for 3500 to 4000 tons of standard sections. Local warehouse prices are 2.10c. for steel bars and 2.25c. for plates and structural material.

Old Material.—The market is very dull and prices are weak. One local mill still has an embargo on scrap and others are buying only odd lots. Busheling scrap appears more active than other grades. Mills generally are well supplied and dealers complain that in most places where they can make sales consumers will not accept shipments. Dealers generally are waiting for the market to pick up and are not trying to force sales by concessions. Not much improvement is expected in the demand before February. We quote, f.o.b. Cleveland, as follows:

Per Gross Ton.	
Old steel rails, rerolling	\$15.00 to \$15.50
Old iron rails	17.50 to 18.00
Steel car axles	18.75 to 19.25
Heavy melting steel	13.25 to 13.75
Old car wheels	14.50 to 15.00
Relaying rails, 50 lb. and over	23.00 to 23.50
Agricultural malleable	12.50 to 13.00
Railroad malleable	14.00 to 14.50
Light bundled sheet scrap	12.50 to 13.00

Per Net Ton.	
Iron car axles	\$21.00 to \$22.00
Cast borings	7.75 to 8.00
Iron and steel turnings and drillings	8.00 to 8.50
Steel axle turnings	9.25 to 9.50
No. 1 busheling	12.00 to 12.50
No. 1 railroad wrought	13.50 to 14.00
No. 1 cast	13.00 to 13.50
Stove plate	10.00 to 10.50
Bundled tin scrap	11.00 to 11.50

Coke.—The market is very dull. Consumers of both furnace and foundry grades are mostly covered for the first half so that there is little inquiry for coke for either prompt shipment or contract. Prices are firm. We quote standard furnace at \$3.25 to \$3.50 per net ton at oven for contract and \$4 to \$4.10 for prompt shipment. Standard 72-hour foundry coke is held at \$4 to \$4.50 for contract and \$4.50 for prompt shipment.

Cincinnati

CINCINNATI, OHIO, January 15, 1913.—(By Telegraph.)

Pig Iron.—The expected inquiry has not yet developed. While it is known that a large number of melters in this territory have not covered for first half requirements, for some reason they are holding back. Several large inquiries for last half that are pending have not as yet been formally submitted and the market is mainly a waiting one.

A local consumer, however, contracted for 400 tons of Southern foundry for first quarter, and the usual number of small orders for filling in have been lately booked. One local agency reports the sale of about 8000 tons of pipe iron to an Eastern corporation, shipment to be made before July 1. A northern Ohio company took 200 tons of Southern No. 2 foundry at \$14 for first quarter, and numerous other small quantities have been booked at the same figure, but it cannot be denied that several Tennessee furnaces are taking on business around \$13.50, Birmingham basis, for first quarter shipment. As the resale iron previously disturbing the market in the South is getting scarce, it is predicted that prices will soon be firmly re-established on the \$14 basis or even higher. The production in the Ironton district has been temporarily further curtailed by high water, and the Hanging Rock furnace was compelled to bank for an indefinite period. The Ashland Iron & Mining Company has also blown out its furnace for repairs, and stocks are said to be dwindling in that district at a more rapid rate than in other producing centers. There is yet a small quantity of resale No. 2 foundry obtainable at about \$16.50, Ironton, but the furnace quotation is \$17. Based on freight rates of \$3.25 from Birmingham, and \$1.20 from Ironton, we quote f.o.b. Cincinnati, as follows:

Southern coke, No. 1 foundry and 1 soft ..	\$17.00 to \$17.50
Southern coke, No. 2 foundry and 2 soft ..	16.75 to 17.25
Southern coke, No. 3 foundry	16.50 to 17.00
Southern, No. 4 foundry	16.25 to 16.75
Southern gray forge	16.00 to 16.50
Old silvery, 8 per cent. silicon	20.70 to 21.20
Southern Ohio coke, No. 1	18.70 to 19.20
Southern Ohio coke, No. 2	18.20 to 18.70
Southern Ohio coke, No. 3	17.75 to 18.45
Southern Ohio malleable Bessemer	17.70 to 18.20
Basic, Northern	18.20 to 18.70
Lake Superior charcoal	19.25 to 19.75
Standard Southern car wheel	27.25 to 27.75

(By Mail)

Old Material.—Conditions are not quite so good as they were last week at this time. Buyers are holding back and not much scrap of any kind is changing hands. Most dealers look for an improvement before the month has passed. The minimum figures given below represent what buyers are willing to pay for delivery in their yards, southern Ohio and Cincinnati, and the maximum quotations are dealers' prices f.o.b. at yards:

Per Gross Ton.	
Bundled sheet scrap	\$10.50 to \$11.00
Old iron rails	14.25 to 14.75
Relaying rails, 50 lb. and up	21.25 to 21.75
Rerolling steel rails	13.25 to 13.75
Melting steel rails	11.25 to 11.75
Old car wheels	12.75 to 13.25

Per Net Ton.	
No. 1 railroad wrought	\$11.25 to \$11.75
Cast borings	7.25 to 7.75
Steel turnings	7.75 to 8.25
No. 1 cast scrap	11.00 to 11.50
Burnt scrap	8.00 to 8.50
Old iron axles	18.25 to 18.75
Locomotive tires (smooth inside)	12.00 to 12.50
Pipes and flues	7.75 to 8.25
Malleable and steel scrap	9.25 to 9.75
Railroad tank and sheet scrap	6.75 to 7.25

Coke.—Spot shipment prices have eased off a trifle in the Connellsville district, and 48-hr. coke can be obtained all the way from \$3.75 to \$3.90 at oven, with first half contract quotations about 50c. a ton lower. There is still considerable complaint in many localities as to delayed shipments, and this condition will doubtless exist through the remainder of the winter. Foundry coke is quoted for prompt movement around \$4.25 to \$4.75 per net ton at oven in the Connellsville field, and from \$4 to \$4.50 for contract business. Wise County

and Pocahontas operators are getting the same prompt shipment prices as those in the Connellsville district, but contract quotations average 25c. a ton lower.

Finished Material.—Steel bars, from local warehouse stocks, are bringing all the way from 2.05c. to 2.15c. a lb., and structural material from 2.15c. to 2.25c. There has been an improvement in the call for structural shapes, but many of the mills are unable to take the business offered, as their order books are well filled for the next few months. There is no diminution in the demand for sheets. The local mill has been compelled to close down temporarily on account of the flood, but is expected to be in full operation again within a few days. The railroads are generous buyers of small quantities of railroad track material for nearby shipment.

The Isaac Joseph Iron Company, Cincinnati, has been incorporated with \$50,000 capital stock, to do a scrap iron and railroad business heretofore conducted under the same name.

Birmingham

BIRMINGHAM, ALA., January 13, 1913.

Pig Iron.—Not in a long time has there been as quiet a selling period in this market as in the first third of the month. Several large makers aver that their 1913 sales are a mere bagatelle, two affirming that 1000 tons would cover all business done in that time. Brokers agree in saying that \$14 iron can be had for both spot and first quarter. One says he has had the offer of 5000 to 6000 tons at \$14, available for first-quarter delivery, but that he has not been able to sell it because no buyers are in the market at this time. One furnace company has sold carload lots for spot and first quarter at \$14, and quotes that price for these deliveries. Others quote \$14.50 for first quarter and first half. The pipe makers and other large buyers are reported as having made many inquiries for future requirements, but practically no business appears to have resulted. The buying movement by the pipe companies is expected to set in about January 20. Some resale iron is in sight at a reputed quotation of \$14 without sales. Failure to make sales at this level is not regarded as indicating weakness, but as simply denoting a dull buying period. Stocks rose 10,000 tons during the month, increasing from 75,000 tons to something over 85,000. Two additional furnaces were in blast and one maker piled up a lot of iron. This maker, however, says the iron has been sold and has simply been made ahead of time or there was difficulty in delivery or delay in getting ready for its receipt, on owing to taking of inventories, etc. Quotations for spot and first half, f.o.b. cars at furnace, are continued as follows:

No. 1 soft and foundry.....	\$14.50 to \$15.00
No. 2 soft and foundry.....	14.00 to 14.50
No. 3 foundry.....	13.75 to 14.25
No. 4 foundry.....	13.50 to 14.00
Gray forge.....	13.25 to 13.75
Basic.....	14.00 to 14.50
Charcoal.....	25.00 to 25.50

Cast Iron Pipe.—Makers report only a fair business. Plants making the smaller sizes are still actively employed, but the pits for the larger sizes are not all in operation. The pipe manufacturers have been unable to secure the advance which they regarded as coming to them incident to the increased price of pig iron. No orders of large size are in prospect; in fact, orders are reported scarce. Prices are still maintained at \$24.50 for 4-in. and \$22.50 for 6-in. and up, with \$1 added for gas pipe.

Old Material.—The demand on yards in this district has been somewhat larger than the supply, and local buyers have gone outside for some of their requirements. Dealers are making special effort to accumulate, relaying rails being particularly desired. Prices are firm owing to these conditions, and continue f.o.b. cars at yards, per gross ton as follows:

Old iron axles.....	\$15.50 to \$16.00
Old steel axles.....	15.50 to 16.00
Old iron rails.....	15.50 to 16.00
No. 1 railroad wrought.....	13.00 to 13.50
No. 2 railroad wrought.....	11.50 to 12.00
No. 1 country wrought.....	9.50 to 10.00
No. 2 country wrought.....	9.00 to 9.50
No. 1 machinery cast.....	11.50 to 12.00
No. 1 heavy melting steel.....	11.50 to 12.00
Tram car wheels.....	12.00 to 12.50
Standard car wheels.....	12.50 to 13.00
Light cast and stove plate.....	9.50 to 10.00

Coal and Coke.—Coke is scarce and high. Foundry coke is selling around \$4 per net ton at oven, with very slight commissions for brokers effecting sales. A

large inquiry has come from Texas, but no order resulted, owing to high prices. Almost all available coke ovens are in operation. The coal output is large, movements are freer and prices firm. The small mines reporting to the State mine inspector on 1912 output show a general increase of 50 to 150 per cent. over 1911. Indications are that the Alabama output for 1912 may come close to 20,000,000 tons, against a prior high record of 16,000,000 tons.

St. Louis

ST. LOUIS, MO., January 13, 1913.

The market has shown no further loss of momentum and in some respects is giving signs of a renewal of activity.

Pig Iron.—Sales of the week were confined for the most part to carload lot orders. The aggregate of business in 100-ton lots and above will scarcely exceed 1000 tons. Prices are seemingly maintained, though there is some No. 2 Southern iron—believed to be resale material—that can be had for \$13.50, Birmingham basis, for first or second quarter delivery. The chief feature of the situation seems to be that consumers, having completed inventories, have found enough material in their yards, as a result of the end of the year rush to complete contracts, to enable them to play a waiting game. Inquiries are few and for small quantities. Insistence on quick shipment and deliveries on specifications on contract are still emphasized.

Coke.—The extreme difficulty of delivery is still a feature and holders of contracts are being informed that they will be fortunate if they get more than half their allotments for some time to come. There is very little furnace coke from the Connellsville region being sold here. By-product coke is available at about \$7 delivered St. Louis.

Finished Iron and Steel.—There have been some sales of small lots of standard-section steel rails, but these were for immediate needs. Fabricators are doing their best to prepare against the spring break in the weather, but with their yards pretty well cleaned up and deliveries held up there is little likelihood of their getting very far ahead. They report considerable ahead on architects' boards. The lumber and coal interests are buying quite freely of light rails. The agricultural and wagon interests are taking all they can get in the way of material. Track fastenings are in good request for the season at \$2.40 for bolts and \$2.05 for spikes.

Old Material.—Mills are beginning to buy. The indications favor a steady and, probably, a rising market, because of the shutting off of supplies from railroad sources by the weather. The only list closing this week is one of 500 tons from the Vandalia. Relaying rails are still scarce and there is also a shortage of No. 2 railroad wrought. We quote dealers' prices, f.o.b. St. Louis, as follows:

Per Gross Ton.

Old iron rails.....	\$15.00 to \$15.50
Old steel rails, re-rolling.....	15.50 to 16.00
Old steel rails, less than 3 ft.....	14.00 to 14.50
Relaying rails, standard section, subject to inspection.....	24.00 to 25.00
Old car wheels.....	16.00 to 16.50
Heavy melting steel scrap.....	13.50 to 14.00
Frogs, switches and guards cut apart.....	13.50 to 14.00

Per Net Ton.

Iron fish plates.....	\$13.00 to \$13.50
Iron car axles.....	22.00 to 22.50
Steel car axles.....	18.50 to 19.00
No. 1 railroad wrought.....	12.50 to 13.00
No. 2 railroad wrought.....	12.50 to 12.75
Railway springs.....	12.00 to 12.50
Locomotive tires, smooth.....	13.00 to 13.50
No. 1 dealers' forge.....	9.25 to 9.75
Cast iron borings.....	7.75 to 8.25
No. 1 busheling.....	11.00 to 11.50
No. 1 boilers, cut to sheets and rings.....	8.00 to 8.50
No. 1 cast scrap.....	12.25 to 12.75
Stove plate and light cast scrap.....	9.00 to 9.25
Railroad malleable.....	12.00 to 12.50
Agricultural malleable.....	10.50 to 11.00
Pipes and flues.....	8.00 to 8.50
Railroad sheet and tank scrap.....	8.00 to 8.50
Railroad grate bars.....	9.50 to 10.00
Machine shop turnings.....	9.25 to 9.75
Bundled sheet scrap.....	7.50 to 8.00

San Francisco

SAN FRANCISCO, CAL., January 7, 1913.

General distributive business is considerably larger than at the beginning of 1912 and specifications from merchants, and especially from manufacturers, are heavy. Local prices still tend upward, and there is considerable demand for early delivery, though few

buyers are willing to pay the premiums asked. Some apprehension is felt regarding agricultural conditions, as the grain has fallen in the last month, and freezing weather has damaged orange and other crops.

Bars.—More delay than before is noted in deliveries, and supplies in store begin to show signs of depletion. Specifications are coming out freely. Some difficulty is experienced in filling the demand for reinforcing bars, as many builders are in the market, and there is little on hand or available for early shipment. A much larger demand is expected in the next three or four months. Local prices are higher, soft steel bars in small lots from store being quoted at 2.75c., and iron at 2.65c.

Structural Material.—Building records for the year as a whole are highly satisfactory, though last month showed a material decrease in most coast cities. Contractors are greatly hampered by slow deliveries, and the delay in lettering contracts may be partly attributed to this condition. Plain material for shipment in 6 to 8 weeks is quoted on a basis of 1.75c. at mill, but local interests do not buy readily at this price, and it is almost impossible to get delivery before September without paying the premium. The Judson Mfg. Company has taken a contract for about 300 tons for the Mary Phelan building, and the Vulcan Iron Works has a 200-ton contract for the Longfellow school in Oakland. The Llewellyn Iron Works has the Los Angeles power plant, and the city of Los Angeles will take bids January 31 for 253 steel transmission towers. Grant Fee, this city, has submitted the lowest bid for the general contract on the U. S. Subtreasury, at \$384,300. The Oakland auditorium plans are still held up for alterations. The Northwest Steel Company is low bidder on a bridge near Newburg, Ore., at \$19,686. C. C. Moore & Co. are planning to put up a large building at First and Mission streets, this city. Plans are about complete for the 10-story Fresno Estate building at Fresno, Cal. The Dinwiddie Construction Company has the general contract for a 12-story building to replace the Marquam block at Portland, Ore.

Rails.—No definite inquiries have been received from the larger buyers, though some good-sized sales are expected within a few months. Efforts are being made to finance the completion of the Ocean Shore project. There is much uncertainty regarding the extension of interurban lines, but some important work of this nature will undoubtedly be done during the year.

Sheets.—Jobbing trade is opening up well for this time of year, and merchants are specifying freely. Specifications from manufacturers have been unusually large. Most buyers have already taken all their allotments for January and are beginning to specify for next month. A few mill agents are able to take some new business for prompt delivery, and as others have practically withdrawn from the market such offerings find a lively demand. The town of Redlands, Cal., will take bids January 15 for 36,000 ft. of 12 to 24-in. riveted pipe.

Plates.—No construction projects of special importance are noted, but manufacturers are taking a rather larger tonnage than a year ago. Distributing business is moderate, but supplies are light and jobbers find some difficulty in meeting the demand.

Merchant Pipe.—Conditions are exactly the opposite of those a year ago, when merchants were well cleaned out and mills were soliciting business. Stocks at most coast points are said to be the largest in several years, some merchants having enough to fill their normal requirements for about six months. Specifications are accordingly limited, though there is some activity in the small trade. The outlook for oil pipe is improving, as the oil market has gained considerable strength of late. The town of Redlands, Cal., will take bids January 15 for 1800 ft. of 4 and 6-in. pipe, and the town of Fullerton has let a contract for a water system of Converse pipe.

Cast Iron Pipe.—Business actually in hand is still rather light, but a heavy tonnage is expected in the next few weeks. A large inquiry from San Diego is expected soon. Redlands, Cal., will take bids January 15 for about 400 tons of cast iron pipe and specials. Taft, Cal., has just taken figures on a high-pressure system, and Riverside will be in the market soon. Fullerton let a contract December 30 for a complete distributing system. Prices are unchanged, at \$38.50 per net ton for 4-in.; \$36.50 for 6 to 10-in., and \$36 for larger sizes.

Pig Iron.—Melters are well supplied for current needs. New business comes out only in scattering loads. No. 2 Southern foundry iron for prompt ship-

ment is quoted at \$24.60 per gross ton, and second quarter at \$25.10.

Coke.—Spot supplies of foreign coke have been increased by the arrival of two cargoes, and at the moment little business is being booked in domestic coke. A considerable portion of one cargo has been taken for smelter use, and the remainder is being rapidly sold to the foundry trade. No more foreign coke is expected in the market for some time, and it is expected that domestic markets will be called upon for a large tonnage. English and German coke is quoted at \$14 to \$14.50 per gross ton, ex ship.

Old Material.—No single sales of importance are noted, but local buyers are taking more interest and all lines of scrap are moving off rapidly. Prices are firmly held, but large dealers are inclined to reduce their holdings, which have been very large. Prices are as follows: Cast iron scrap, per net ton, \$15.50; steel melting scrap, per gross ton, \$12.50; wrought scrap, per net ton, \$12.50 to \$15; rerolling rails, per net ton, \$11.

Prices Decline in British Market

Over-Production in Tin Plate

—Speculation Depressed by Copper

(By Cable)

MIDDLESBROUGH, ENGLAND, January 15, 1913.

All speculative markets are depressed under the lead of copper. There is an over-production in tin plate estimated at 12 to 15 per cent. A meeting is to be held next week to consider a concerted stoppage of tin plate mills.

General business is very quiet and nothing is doing in semi-finished steel. The Peking-Kalgan Railroad wants 5000 tons of rails. We quote as follows:

Cleveland pig iron warrants (closing Monday), 66s. 1d., against 67s. 8½d. one week ago.

No. 3 Cleveland pig iron, maker's price, f.o.b. Middlesbrough, 66s. 6d., against 68s. 3d. one week ago.

Steel sheet bars (Welsh) delivered at works in Swansea Valley, £5 17s. 6d., a decline of 2s. 6d.

German sheet bars, f.o.b. Antwerp, 112s. 6d.

German 2-in. billets, f.o.b. Antwerp, 107s. 6d.

German basic steel bars, f.o.b. Antwerp, £6 3s., a decline of 1s.

Steel bars, export, f.o.b. Clyde, £8 5s.

Steel joists, 15-in., export, f.o.b. Hull or Grimsby, £7 10s.

German joists, f.o.b. Antwerp, £5 12s. to £5 15s.

Steel ship plates, Scotch, delivered local yard, £8 7s. 6d.

Steel black sheets, No. 28, export, f.o.b. Liverpool, £9 15s., a decline of 5s.

Steel rails, export, f.o.b. works port, £6 15s.

Tin plates, cokes, 14 x 20, 112 sheets, 108 lb., f.o.b. Wales, 15s. 1½d.

Some Indications That the High Point Is Reached—Has the German Pace Been Too Rapid?

(By Mail)

MIDDLESBROUGH, January 3, 1913.

The old year ended peacefully enough and 1913 opens with works in nearly every branch of industry overrun with old orders and straining every nerve to pick up the arrears from 1912. In a general way the tone of all sections is strong, but for all this the reasonable man is beginning to wonder whether it is not time for a halt. Certainly the prices of some products cannot go much higher without seriously damaging consumption. There is much grumbling, for example, over the price of billets and sheet bars. None of this material can be bought to-day to show the user a profit on his current selling prices, and this fact is of considerable importance at the present juncture. Absolutely fancy prices are demanded for prompt supplies of half-finished steel, one Lancashire works actually asking 140s. the other day for billets, but the stringency of the general position seems to be concentrated on this class of material. The German Steel Works Union is in a strong position and signalized the close of the old year by further raising prices, asking now 107s. 6d. for billets for first half delivery, and having no more sheet bars to sell earlier than second half. What its price would be for this is not known, but certainly not less than 115s. f.o.b. Antwerp, while it is doubtful if this would be accepted for anything but a limited tonnage.

While people mostly speak with unabated enthusiasm there are a few of the gray beards of the trade who

are shortening sail against what they regard as indications of coming squalls. A point which has but little direct bearing on iron and steel but which is significant is that some of the clever ship owners are selling their boats with the intention of replacing them later at lower prices. These people regularly pursue this policy. They may be premature in their action on this occasion, but if they can afford to wait a bit they will surely be justified. One of them has for years openly avowed that his policy was to buy "when the soup kitchens in Glasgow opened."

The German position is not liked very much here, and there are whispers of approaching financial stress through that country having gone ahead too rapidly in the last few years. Nothing tangible can be laid hold of, but a pessimistic tone is creeping into a section of the press usually credited with exceptional foresight in industrial affairs.

The following are details of the shipments of Cleveland iron for 1912 in gross tons, the total being the largest since 1907:

	Scotland	England and Wales	Foreign	Total
1907	428,957	102,452	1,219,472	1,750,881
1908	351,074	96,323	852,701	1,300,098
1909	316,547	132,750	742,561	1,191,858
1910	356,681	126,027	716,680	1,199,388
1911	375,853	148,603	798,851	1,323,307
1912	370,660	132,116	837,316	1,340,092

The German Iron Market

BERLIN, December 27, 1912.

As the year ends discussions of the general position of the iron market and the prospects for next year have grown more animated, due in part to the cut prices bid on bars at Berlin about 10 days ago. While no new facts have been brought out tending to show that a change for the worse is taking place, it is pretty generally admitted that orders for long periods ahead have become rare, especially from dealers.

The Berlin incident gave the Cologne Gazette occasion to make inquiries among the great iron companies of the Essen region as to their views of the situation. Their answers were almost unanimously to the effect that they fully maintained their previous optimistic views as to the position of the market. They agreed that no weakening had yet been observed anywhere; that even the Balkan war and the tightness of the money market had not materially affected the iron trade.

Pig Iron Active

The Pig Iron Syndicate met at the end of last week and gave out the following summary of the situation: "Business in pig iron, both home and foreign, is very animated in all grades. Home consumers have, with few exceptions, covered their requirements for the first half of 1913, and some of them call for considerably larger quantities than for this year. Hence the sales already exceed allotments. The foreign demand is very brisk, particularly in phosphoric grades, and only a small part of it can be satisfied. Shipments in November, amounting to 103 per cent. of the allotments, continued of about the same volume as for previous months. Calls for delivery are extraordinarily urgent, and the furnaces are put to their utmost energy in meeting them."

The quotations on English hematite pig iron delivered at Ruhrort are now 100 to 102 marks, compared with 98 to 100 marks at the fortnightly trading on the Düsseldorf Exchange a week ago. Other reports mention inquiries of large volume for pig and other material from Russia; that England and America continue to send in offers for German semi-finished material, but that the Steel Works Union is not in a position to meet their increased demands. Specifications on orders continue to come in regularly, and many of them with urgent requests for prompt delivery.

What Large Producers Say

The newspaper discussion of the Berlin cut bid on bars has called forth the following remarks from the director of one of the great steel companies situated in the southwestern part of the empire: "It is a fact that in the home market orders for bars are being held back along the whole line. On the other hand, we are receiving from abroad inquiries for bars amounting to 5000 to 10,000 tons a week, all of which we have to reject. Business in bars continues good, with periods of delivery running 16 to 24 weeks ahead. We have work enough to the middle of next year, and most producers of bars are in a similar position. That business in structural forms grows quieter in winter is

well known. Pig iron cannot be had at all, and the same is true of semi-finished material. . . . We are fully convinced here that as soon as order has been restored in the Balkans business will experience quite an enormous forward impetus. As long as pig, scrap and semi-finished steel are scarce it is impossible for the market position to deteriorate; and such is the case now, for supplies are nowhere on hand. Neither furnaces, foundries, nor rolling mills have stocks of iron or steel material lying round. The shortage of supplies amounts to such a calamity as I have never seen in all my experience."

A great Westphalian establishment wrote to one of the newspapers as follows: "Work at the iron mills is still very active and it finds expression in the great and general scarcity of pig iron. Of course the fact cannot be denied that large dealers have been in part holding back, especially in bars and other non-syndicated products, for several weeks; but this does not mean that the boom is at an end. The cause of the hesitancy of the dealers is to be found in the insecurity of the political situation, and just as soon as there is a prospect of better political conditions a new improvement in business is to be expected."

A big company in the Rhine region expresses itself as follows: "Business in bars and plates has shown considerable reserve for several weeks on the part of home buyers, which is undoubtedly to be attributed to the political situation and the dearth of money. In consequence of this a certain instability of prices for bars exists. Foreign buyers are still in the market with large inquiries."

Unparalleled Exports

The total exports of iron and steel products during November reached 530,434 tons, against 531,152 tons in October and 455,213 tons in November, 1911. The past two months showed total exports of above 1,060,000 tons, which is without parallel in the history of the German iron trade.

The Belgian market reported an advance in semi-finished steel of one shilling at the end of last week. The Steel Works Comptoir raised the export price of steel rails 2s—6d per ton to £6.

New York

NEW YORK, January 15, 1913.

Pig Iron.—The week has not been devoid of transactions, but the market is far from active. Several consumers in New Jersey territory have been figuring on comparatively small lots, and sales have been made chiefly for delivery in first and second quarters. There is inquiry for third quarter iron, but no haste to close for deliveries so far forward. Developments apart from the iron industry itself suggest that it may be as well to wait and see how some pending matters turn out. Some foundries in this district report a slight falling off in business in the latter part of December, but now that inventories have been taken, new work is expected to develop. At all events, foundries are taking out their pig iron according to contract stipulations. Some sales of pipe iron are reported in eastern Pennsylvania, but basic iron is inactive and leading buyers are not expected to require more iron for some time. The market is quieter in districts supplied from Buffalo, after the heavy buying there in the last two weeks of 1912. We quote as follows for Northern iron at tidewater: No. 1 foundry, \$18.75 to \$19; No. 2 X, \$18.25 to \$18.75; No. 2 plain, \$18 to \$18.25. Southern iron is quoted at \$18.75 to \$19 for No. 1 foundry and \$18.25 to \$18.75 for No. 2.

Structural Material.—Authenticated information could not be obtained of the placing of any large contracts for fabricated material, but the attitude everywhere was optimistic with respect to the promise of the future, at least for six months. Current business continues good and deliveries have not improved measurably. Material can be obtained in 12 to 14 weeks and the usual price on this delivery obtains, that of 1.66c., Pittsburgh. To the Eastern Steel Company 2700 tons has been awarded the Brooklyn Institute of Arts and Sciences and the Central Railroad of New Jersey has taken bids on 400 tons for bridge over the Shrewsbury; it is understood that a new structure of considerable size is projected for the Public Ledger, Philadelphia, and also for transmission towers and other work at the Panama Canal. Quotations are: 1.66c., New York, mill shipments, in the latter part of the year and 1.76c., New York, in three months; from store 2.25c., New York.

Plates.—While plates from Eastern mills remain at 1.76c., New York, one agency announces for less than carload lots an extra covering the difference in freight

tariff between carload and less than carload lots, and all supplies are thus obtainable at 1.79c., New York. Some inquiry for contracts for the first half are being considered favorably by at least one mill at the present basis of 1.76c., New York. The situation remains unchanged, even in the matter of car purchases. The Harriman inquiry still remains open but the 1500 cars to be bought by the Wheeling & Lake Erie and the cars for the ore roads subsidiary to the United States Steel Corporation are expected to be purchased within a few days. Quotations for plates remain 1.66c., New York, for mill shipment in the third quarter, and 1.76c. for sheared and 1.81c. for universal in four to six weeks. Information gained since the foregoing was printed covers 2500 cars for the Louisville & Nashville given to the Pressed Steel Car Company, which has also 500 ore cars for the Pittsburgh & Lake Erie. The ore road car purchases are reported elsewhere.

Iron and Steel Bars.—The situation in steel bars seems mixed. One mill is willing to contract for the latter half with consumers at the present prices, but the consumers show no desire to close; in another quarter this attitude is taken to mean that the present highly intensive manufacturing leaves the buyer still unsettled as regards the future. Another mill representative reports numerous signs of a conservative feeling which is going to help both in steadying purchases and in relieving mills from demands savoring too much of a speculative nature. One buyer of large quantities on the other hand looks for higher prices in steel bars. The fact remains that demand is still as large as production. Bar-iron orders have not come in very heavily since January 1, but specifications are again appearing in large volume on the completion of inventories and mills are not getting much relief. Steel bars remain at 1.40c., Pittsburgh, or 1.56c., New York, delivery at convenience of the mill, and 2.05c. from store. Refined iron bars are generally 1.75c. to 1.80c., New York, and from store, 2.05c.

Cast Iron Pipe.—Bids are being opened to-day at Lynn, Mass., for 500 tons, and Cambridge, Mass., for 150 tons. Ramsey, N. J., will open bids February 4 for 950 tons of 4 to 10 in. Private buying has been quiet, but inquiries are better, especially from New England points. Quotations on carload lots of 6 in. per net ton, at tidewater, range from \$25 to \$27, according to condition of makers' order books.

Old Material.—Dealers are encouraged by the full prices which they are able to get on such small quantities as consumers are now taking. While inquiries are almost wholly wanting it is found possible to dispose of reasonable quantities of almost all articles on the list of old material. The largest sales reported are of a few 500-ton lots of heavy melting steel scrap. Dealers' quotations are as follows, per gross ton, New York and vicinity:

Old girder and T rails for melting.....	\$12.00 to \$12.50
Heavy melting steel scrap	12.00 to 12.50
Relaying rails	22.50 to 23.00
Revolving rails	14.50 to 15.00
Iron car axles	24.00 to 25.00
Old steel car axles	17.00 to 17.50
No. 1 railroad wrought	13.75 to 14.25
Wrought iron track scrap	13.00 to 13.50
No. 1 yard wrought, long	12.50 to 13.00
No. 1 yard wrought, short	12.00 to 12.50
Light iron	5.25 to 5.75
Cast borings	8.75 to 9.00
Wrought turnings	9.25 to 9.50
Wrought pipe	10.75 to 11.25
Old car wheels	16.00 to 16.50
No. 1 heavy cast, broken up.....	12.00 to 12.50
Stove plate	9.75 to 10.00
Locomotive grate bars	9.00 to 9.50
Malleable cast	11.50 to 12.00

Ferroalloys.—Quotations for 80 per cent. ferromanganese stand at \$65 to \$70, Baltimore, for spot or prompt delivery, and \$65 for second half. The quiet state of the market has caused the appearance of odd lots of resale ferromanganese which can be delivered promptly at or near the lower figure mentioned. Ferrosilicon, 50 per cent., is quiet also at \$75, Pittsburgh, for carloads, \$74 for 100 tons and \$73 for 600 tons or over.

Boston

BOSTON, MASS., January 14, 1913.

Old Material.—The market drags, but with no change in prices. The mills, while rushed with orders, have a sufficient supply of scrap for the present. The quotations given below are prices offered by the large dealers to the producers and to the small dealers and collectors, per gross ton, carload lots, f.o.b. Boston and other New England points which take Boston rates

from eastern Pennsylvania points. In comparison with Philadelphia prices the differential for freight of \$2.30 a ton is included. Mill prices are approximately 50c. a ton more than dealers' prices:

Heavy melting steel	\$11.75 to \$12.00
Low phosphorus steel	14.00 to 15.00
Old steel axles	15.00 to 15.50
Old iron axles	23.00 to 23.50
Mixed shafting	14.00 to 14.25
No. 1 wrought and soft steel	11.75 to 12.00
Skeleton (bundled)	10.00 to 10.25
Wrought iron pipe	10.50 to 10.75
Cotton ties (bundled)	10.00 to 10.25
No. 2 light	4.50 to 5.00
Wrought turnings	8.25 to 8.50
Cast borings	8.00 to 8.25
Machinery, cast	13.50 to 14.00
Malleable	11.00 to 11.50
Stove plate	9.00 to 9.50
Grate bars	8.00 to 8.25
Cast-iron car wheels	13.50 to 14.00

Buffalo

BUFFALO, N. Y., January 14, 1913.

Pig Iron.—The market has been exceedingly quiet with the smallest total of sales of any week for some time. Such moderate lot buying as has been in evidence is for prompt and nearby deliveries. Some charcoal iron has been sold and considerable additional is under inquiry. So far as general foundry grades and malleable are concerned most users appear to be pretty well covered for first half and those who are not are apparently temporarily deferring further purchasing awaiting the outcome of developments which may result from the change in the federal administration. To offset this apathy furnacemen are not at all aggressive in their search for orders. Prices remain the same as last week. The Rogers-Brown Iron Company's furnace No. 1 at its Susquehanna plant, South Buffalo, which has been out for relining was again placed in commission the fore part of this week and all of the four furnaces of the plant are now in operation. For first half delivery, f.o.b. Buffalo, we quote as follows:

No. 1 foundry	\$17.50 to \$18.25
No. 2 X foundry	17.25 to 18.00
No. 2 plain	17.00 to 17.75
No. 3 foundry	16.75 to 17.50
Gray forge	16.50 to 17.25
Malleable	17.25 to 18.00
Basic	18.00 to 18.25
Charcoal, regular brand and analysis.....	18.25 to 19.25
Charcoal, special brand and analysis.....	22.00

Finished Iron and Steel.—It is becoming more and more difficult to place orders for specified deliveries. Customers not covered beyond the first quarter are coming into the market for second and third quarter requirements endeavoring to secure a place on mill books regardless of the date of deliveries even though the deliveries carry into the fourth quarter. Mills and agencies are not soliciting new business and no new business is being taken from new customers. The only orders being considered by mills are those necessary for the protection of regular customers. Even on this class of business deliveries cannot be promised before the third quarter and even more extended dates in some instances. The agency of the principal interest has not yet opened its books for specification after July 1. Some producers have advanced the price of cold rolled shafting to 58 per cent. discount for carloads and 53 per cent. for less than carload lots. Hoops are now being quoted at 1.60c. to 1.70c. Pittsburgh, as absolute minimum. The market for sheets continues active at firm prices and premiums are offered for prompt delivery, shipments within four weeks commanding \$2 to \$3 per ton premium. Trade in wire products is picking up since the general completion of inventories and customers are now looking forward to their spring requirements. The Corrugated Bar Company, of Buffalo, is to furnish reinforcing bars for a 4-story laundry building for the Yale Laundry Company, Syracuse. Bids will be received about January 24 for 300 tons of steel for a factory building for the Oneida Community at Sherrill, N. Y. Bids are soon to be asked for steel for the Stadium for the New York State Fair Commission at Syracuse. The Phoenix Bridge Company, has the New York Central bridge, Oswego, N. Y., and the Owego Bridge Company the steel work for two additional stories on the Arlington Hotel, Binghamton, and also the steel for the School of Agriculture building to be erected by the State of New York, at Cobleskill, N. Y. The Buffalo Structural Steel Company has been awarded the 250 tons for the Foster-Milburn factory and laboratory at Buffalo.

Old Material.—The scrap market has shown a slight improvement and indications are that there will be an

increase in demand upon the completion of inventories at mills and foundries. Transactions have been only of moderate volume, however, and prices remain practically the same as for the previous week. We quote as follows, per gross ton, f.o.b. Buffalo:

Heavy melting steel	.....	\$14.75 to \$15.25
Low phosphorus steel	.....	17.00 to 17.25
No. 1 railroad wrought	.....	15.50 to 16.00
No. 1 railroad and machinery cast scrap	.....	14.00 to 14.50
Old steel axles	.....	16.50 to 17.00
Old iron axles	.....	23.75 to 24.00
Old car wheels	.....	16.00 to 16.75
Railroad malleable	.....	14.00 to 14.50
Boiler plate sheared	.....	15.00 to 15.50
Locomotive grate bars	.....	11.50 to 12.00
Wrought pipe	.....	10.25 to 10.75
Tank iron	.....	10.50 to 10.75
Wrought iron and soft steel turnings	.....	8.75 to 9.00
Clean cast borings	.....	8.00 to 8.50

Metal Market

NEW YORK, January 15, 1913.

The Week's Prices

		Copper, New York		Tin		Lead		Spelter	
		Electro-lytic	New York	New York	St. Louis	New York	St. Louis	New York	St. Louis
Jan.	Lake.								
9.....	17.50	17.37½	50.30	4.35	4.20	7.30	7.15		
10.....	17.50	17.37½	50.25	4.35	4.20	7.30	7.15		
11.....	17.50	17.37½	.....	4.35	4.20	7.30	7.15		
13.....	17.25	17.25	50.15	4.35	4.20	7.25	7.10		
14.....	17.25	17.00	50.75	4.35	4.20	7.25	7.10		
15.....	17.25	17.00	51.00	4.35	4.20	7.25	7.10		

Copper is substantially lower and unsettled. Spot tin is tightly held at near 51c. Lead is quiet but firm at unchanged prices. Spelter is dull and lower. Antimony continues inactive.

New York

Copper.—The market is upset and both domestic and export business is sought at reduced prices, even by some of the largest producers. The break was precipitated by the Copper Producers' statement for December showing an increase in surplus of over 19,000,000 lb. and which also enabled the copper statistics of 1912 to be viewed complete. Another factor, equally as important, was the announced failure to establish peace in the Balkans. How important the European situation is may be inferred from the fact that standard copper in London, which, when it fluctuates violently, has a reflective effect on the commodity here as well as abroad, declined 46 between last Friday and to-day. Some students of the market do not believe that there will be any great betterment here until better news comes from the other side. Immediately following the Copper Producers' statement on January 8 the market softened and the downward course has continued, with future delivery metal being hit the hardest. On Thursday March and April electrolytic was offered at 17.25c., cash, New York. On Friday it was offered at 17.12½c., cash, New York, and sold at a little less. On Saturday January shipment electrolytic sold at 17.50c., delivered in the Naugatuck Valley, cash, 30 days, equal to 17.37½c., cash, 30 days, New York, and the sale was sufficient to establish a level for prompt delivery electrolytic. On Monday there was little doing; the market was unsettled and an unverified rumor had copper selling down to 16.25c., cash, New York. With all of the decline buyers have not come forward, and it is assumed that they feel justified in holding off, as they have been doing, for a still longer period. Many are known to be buying in only a hand-to-mouth fashion, especially for immediate delivery. Copper at the close of the first session in London to-day was quoted at £70 15s. for spot and futures at £71. Previously this morning spot was down to £69, and the London market is nervous. The nominal price of Lake copper is 17.25c. and the nominal price of electrolytic is 17c. In Lake there has been little action for the reason that consumers are well filled. The exports of copper this month have been 12,020 tons.

Copper Averages.—The Waterbury average for the month of December was 17.75c. The average New York price for Lake copper, based on daily quotations in *The Iron Age*, was 17.69c. and for electrolytic, 17.49c.

Pig Tin.—The conspicuous feature of pig tin is a fear of a tightness in prompt or spot delivery metal this month despite the fact that 1025 tons arrived on the Minnetonka to-day and still more is coming. The price to-day is 51c., a figure at which sales were made yesterday also. On Friday there was quite a good business. On both Saturday and Monday the market was quiet, but yesterday action was brisk and total sales amounted to probably 300 tons, a part of it on the floor of the

New York Metal Exchange. The indications are that some interest was short of January tin and was forced to buy at prices which ran up to 51c. on lots that totaled 30 tons. Before the close yesterday there were other sales at 50.75c. in the open market. On the Exchange there also were sales of January tin amounting to 50 tons at from 50.25c. to 50.37½c. The New York market failed to follow that of London, which was lower on Tuesday than on Wednesday. April tin was sold yesterday at 49.75c. The price in London to-day is £220 for spot and £226 15s. for futures. The arrivals this month were 1712 tons and there is afloat 4560 tons.

Lead.—The market is dull, but firm at unchanged prices. The large requirements of recent date have been satisfied. The New York price is 4.35c. and that of St. Louis 4.20c.

Spelter.—There is little activity in this metal although the production and consumption continue on a good scale. Its dullness has led to lower prices and quotations are 7.25c., New York, and 7.10c., St. Louis.

Antimony.—The well supplied condition of consumers continues to operate against any noteworthy activity in antimony, while prices continue more or less uncertain because of the existence of resale metal. For Cookson's quotations are 9.75c. to 9.87½c., for Hallett's 9.37½c. to 9.50c. and for Hungarian and Chinese grades 9c.

Old Metals.—The market is weak, with an absence of a demand of any moment. Dealers' selling prices are as follows, the figures named being nominal:

	Cents per lb.
Copper, heavy and crucible	17.00 to 17.25
Copper, heavy and wire	16.00 to 16.25
Copper, light and bottoms	14.50 to 14.75
Brass, heavy	10.25 to 10.50
Brass, light	8.50 to 8.75
Heavy machine composition	14.00 to 14.25
Clean brass turnings	9.50 to 9.75
Composition turnings	12.00 to 12.50
Lead, heavy	4.25
Lead, tea	4.00
Zinc, scrap	6.00

St. Louis

JANUARY 13.—The week has been somewhat quiet, with a slight advance and a little falling off, which, however, did not take the prices down to the starting point. To-day lead closed at 4.20c.; spelter, 7.17½c. to 7.20c.; Lake copper, 17.60c. to 17.85c.; electrolytic copper, 17.50c. to 17.75c.; antimony, Cookson's, 10.35c. to 10.85c.; tin, 50.40c. to 50.55c. In the Joplin ore market the weather had a decided effect, for because of the severity of the conditions many of the mines had to cut their output, most coming from the larger properties. Prices were a shade stronger, with 60 per cent. zinc blende ranging from \$53 to \$56 per ton, the choicest grades going as high as \$59. The demand for calamine consequent on the small output ran the price up to \$30 to \$34 for 40 per cent., while the best lots brought as high as \$38. Lead ore was in good demand at \$53. On miscellaneous scrap metals we quote as follows: Light brass, 6.50c.; heavy brass and light copper, 10.50c.; heavy copper and copper wire, 13c.; pewter, 25c.; tinfoil, 36c.; lead, 3.50c.; zinc, 4c.; tea lead, 3c.

Chicago

JANUARY 13.—Copper quotations are largely nominal, as buyers show a disposition to hold off. For future delivery, as in March or April, copper can be had at concessions but very little is available for prompt shipment at any price. Lead quotations are somewhat firmer but outside lots are still offered at a little less than full prices. The volume of transactions is within restricted limits. We quote as follows: Casting copper, 17.62½c.; Lake, 17.75c. to 18c., in carloads for prompt shipment; small lots, ¼c. to ¾c. higher; pig tin, carloads, 51.25c.; small lots, 52.50c.; lead, desilverized, 4.30c. to 4.35c. for 50-ton lots; corroding, 4.60c. for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 7.30c. to 7.40c.; Cookson's antimony, 11.25c., and other grades, 10.50c. in small lots; sheet zinc is \$9, f.o.b. La Salle or Peru, Ill., less 8 per cent. discount in carloads of 600-lb. casks. On old metals we quote buying prices for less than carload lots: Copper wire, crucible shapes, 15.50c.; copper bottoms, 14c.; copper clips, 15c.; red brass, 12.75c.; yellow brass, 10c.; lead pipe, 4c.; zinc, 5.50c.; pewter, No. 1, 33c.; tinfoil, 39c.; block tin pipe, 45c.

Iron and Industrial Stocks

NEW YORK, January 15, 1913.

The stock market, though quite dull, maintained firmness until Monday of this week when severe pressure on copper stocks, a disquieting speech by the President-elect before the Commercial Club of Chicago on

Saturday night, and some minor unfavorable influences caused a general recession, which became more pronounced on Tuesday. The range of prices on active iron and industrial stocks from Wednesday of last week to the day of this week was as follows:

Am. Iron, com.....	25 1/4 - 31 1/2	Nat. En. & St., pref. 88	- 92
Am. Iron, pref.....	113 1/4 - 118	Pittsburgh Steel, pref.....	99 1/4
Am. Iron & Fdy., com. 52	- 55 3/4	Pressed Steel, com.....	34 - 36
Am. Iron & Fdy., pref.....	116 1/2	Pressed Steel, pref.....	100 - 101
Am. Iron, com.....	40 - 43 1/2	Railway Spring, com. 32	- 35
Am. Iron, pref.....	106	Railway Spring, pref.....	100
Am. Steel Fdries.....	33 3/4 - 35	Republic, com.....	23 3/4 - 26 1/4
Bald. & Co., com.....	50 - 53 1/2	Republic, pref.....	82 1/2 - 86 3/4
Bald. & Co., pref.....	103 3/4 - 104	Rumely Co., com.....	89 1/2 - 92
Beth. Steel, com.....	35 3/4 - 41 1/2	Rumely Co., pref.....	99
Beth. Steel, pref.....	66 - 70 1/2	Pipe, pref.....	55 1/4 - 56 1/2
Case (I. I.) Co., pref.....	100 1/4	U. S. Steel, com.....	61 3/4 - 68 1/2
Colorado Fuel.....	31 3/4 - 36	U. S. Steel, pref.....	109 - 110 1/2
Deere & Co., pref.....	99 3/4 - 99 3/4	Westinghouse Elec.....	73 1/2 - 78 3/4
Emery, pref.....	99 - 100 1/2	Am. Ship, com.....	55
General Electric.....	182 - 186	Chic. Pneu. Tool.....	50 - 52
Gr. N. Ore Cert.....	38 1/4 - 41	Cambria Steel.....	50 - 53 1/2
Int. Harv., com.....	106 1/4 - 111	Lake Sup. Corp.....	30 - 31 1/2
Int. Pump, com.....	13 3/4 - 18 1/2	Pa. Steel, pref.....	93 1/4 - 93 1/2
Int. Pump, pref.....	69 - 70	Crucible St., com.....	16 - 16 1/2
Lackawanna Steel.....	45 - 47 1/2	Crucible St., pref.....	93 - 95 1/2
Nat. En. & St., com. 17	- 18	Harb. Wk. Ref., pref.....	100 1/4 - 102

Dividends Declared

The Emerson-Brantingham Company, regular quarterly, 1 3/4 per cent. on the preferred stock, payable February 1.

J. G. White & Co., Inc., regular quarterly, 1 1/2 per cent. on the preferred stock, payable February 1.

Personal

John Howe Hall, formerly assistant superintendent of the crucible steel department of the Bethlehem Steel Company, South Bethlehem, Pa., and for the past six years metallographist and metallurgist in charge of the research department of what is now the Taylor-Wharton Iron & Steel Company, has severed his active connection with the latter company, having completed the installation of metallographic and testing equipment under the direction of Prof. H. M. Howe, vice-president and consulting engineer, and having perfected the operation of this department in investigating, improving and controlling the quality of the output. He has opened an office at 165 Broadway, New York, to engage in the general practice of consulting metallurgical engineering, making a specialty of steel-making processes, heat treatment and annealing, metallographic and testing equipment for the investigation, improvement and control of product, special steels, etc. Mr. Hall retains a position as consulting engineer with the Taylor-Wharton company.

J. M. Sherrerd, for many years general sales agent of the Taylor Iron & Steel Company, now the Taylor-Wharton Iron & Steel Company, having resigned to engage in other business, George J. Siedler has been appointed sales manager and W. S. Stothoff assistant sales manager, with headquarters at High Bridge, N. J., the changes becoming effective January 1.

Myron Phillips, formerly superintendent of the Lower Union mills of the Carnegie Steel Company at Youngstown, Ohio, has resigned to become general manager of the Logan Iron & Steel Company, Lewistown, Pa.

James C. O'Neil has been appointed credit manager of the Carnegie Steel Company, Pittsburgh, to succeed H. P. Howell, who on January 1 became fourth vice-president of the National Bank of Commerce, New York City, in charge of the credit department of that institution. Mr. O'Neil was formerly assistant to Mr. Howell.

George E. Day, who recently resigned his position of general manager of sales of the Youngstown Sheet & Tube Company, Youngstown, Ohio, was given a dinner January 6 by officials of the company and its subsidiary interests, the Western Conduit & Mfg. Company and the Continental Supply Company. He was presented with a gold watch, and addresses were made by James A. Campbell, president; W. E. Manning, now general manager of sales, and others. Mr. Day will spend the winter in California, where he has purchased a ranch.

G. T. Thomas, formerly assistant general manager of the Carnahan Tin Plate & Sheet Company, Canton, Ohio, has resigned to become general manager of sales of the Trumbull Steel Company, now building a sheet and tin plate plant at Warren, Ohio.

George P. Flinn, representative in Boston, Mass., of

the Ernst Wiener Company, New York, designer and builder of Wiener industrial railroads, now has his office at 201 Devonshire street, Boston.

John T. Simpson, one of the organizers and for the last five years president of the American Concrete-Steel Company, Newark, N. J., has sold his entire interest in that company and opened an office at 1224 Essex Building, Newark, N. J., as architect and engineer.

The Enterprise Boiler Company, Youngstown, Ohio, builder of boilers, tanks and heavy plate work for blast furnaces, etc., has the distinction of having a woman for manager, Miss A. B. Chute, who is said to be a capable executive.

Sanford B. Belden, formerly in charge of the Pittsburgh office of the Jeffrey Mfg. Company, has been elected vice-president, with headquarters at Columbus, Ohio. He has been connected with the company over 17 years.

Charles M. Schwab returns this week from a European trip.

Roy M. Lechthaler, for some years Pittsburgh representative of the Pennsylvania Steel Company, with offices in the Oliver Building, has resigned, effective February 1. He has not as yet made definite plans for the future.

W. R. Beatty of the W. R. Beatty Machinery & Equipment Company, Pittsburgh, has been appointed manager of sales at Chicago for Williams, White & Co., Moline, Ill., with offices at 933 Monadnock Building, Chicago.

W. C. Munn, for some years connected with the purchasing department of the La Belle Iron Works, Steubenville, Ohio, has resigned to accept a similar position with the Youngstown Sheet & Tube Company, Youngstown, Ohio.

Charles M. McElhaney has been made assistant general manager of sales and E. J. Dotterer, Merrill G. Baker and Edward Price, Jr., have been made assistants to J. L. Replogle, general manager of sales of the Cambria Steel Company, Johnstown, Pa.

H. P. Bope, first vice-president and general sales manager of the Carnegie Steel Company, spoke on "The Future Industrial Development of Pennsylvania" before the Board of Trade, Harrisburg, Pa., on Tuesday, January 14.

J. R. McKee and O. D. Young, both of New York, were elected vice-presidents of the General Electric Company at a meeting of the board of directors held December 30. At a previous meeting of the board Anson W. Burchard, also of New York, was elected a vice-president of the company.

Joseph A. McDonald, formerly assistant superintendent of the Ohio works of the Carnegie Steel Company at Youngstown, Ohio, but who resigned about a year ago, is now connected with the Cambria Steel Company, Johnstown, Pa., doing special engineering work.

Frank Huston, formerly in the accounting department of the Republic Iron & Steel Company, Youngstown, Ohio, has resigned to take charge of the cost department of the Cambria Steel Company at Johnstown, Pa.

William B. Hall has become associated with the Union Railway Equipment Company, which controls the car devices patented by Herman Pries, superintendent of the Haskell & Barker Car Company. He was previously vice-president and general manager of the Illinois Car & Mfg. Company and had been superintendent of equipment for the Mather Horse & Stock Car Company.

Hickman, Williams & Co. announce from their Chicago office that Edward P. Hettiger, formerly with that office, will make his headquarters at Cincinnati, Ohio, to take charge of the Cincinnati office as manager to assist Frank M. Eaton. Howard Black, Mr. Eaton's former assistant, will be in charge of the coke department which is being established. Richmond Nicholas will assist H. L. Williams in the management of the Chicago office. Day Williams, formerly with the St. Louis office, has taken charge of the Birmingham office, L. E. Patton resigning. The firm states that the promotion of these young men is the first move to incorporating the business of Hickman, Williams & Co., which will be announced formally when it is consummated.

Alfred Anderson, formerly purchasing agent of the Panama Railroad, Panama Steamship Line and Isthmian

Canal Commission, and who later served in the same capacity with the Metropolitan Street Railway, has been elected president of the recently organized Transit Mfg. & Materials Company, Inc., with offices at 220 Broadway, New York.

V. E. Elstrom has become associated with the Chicago office of the Bethlehem Steel Company, devoting his time to the sale of structural material. He was transferred from the St. Louis office of the company and succeeds J. G. Bartholomew, who has been appointed general manager of the Rochester Bridge Company.

James A. Campbell, president Youngstown Sheet & Tube Company, has sailed for Panama.

Charles D. Rafferty has been appointed superintendent of the Slick forged steel wheel works of the Carnegie Steel Company at East Homestead.

Harry Dreeland has been made assistant superintendent of the Republic Iron & Steel Company, Youngstown, Ohio, succeeding L. H. Mullin, recently made superintendent.

Obituary

CHRISTIAN F. H. WATERMAN, vice-president Noelke-Richards Iron Works, Indianapolis, Ind., died January 5 of heart failure, aged 64 years. He was born in Germany and came to this country when 17 years old, locating in Indianapolis. He engaged in commercial lines, in which he was successful, and subsequently became a sewer contractor, constructing the first part of the city's larger sewer system. He then became interested with Frederick C. Noelke and B. F. Haugh in the Haugh-Noelke Iron Works, but when it became the Noelke-Richards Iron Works in 1902 he retired from active participation in its business, continuing, however, to hold a directorship and the vice-presidency, but was regarded as one of the most valued business counsellors of the directorate. He leaves a widow, two sons and six daughters.

JOHN CALVIN PHILLIPS, for many years superintendent of the Hempfield Foundry at Greensburg, Pa., and a resident of Pittsburgh and vicinity most of his life, died January 3, at Chicago, aged 65 years. He leaves a widow and two daughters.

GEORGE L. HOOPER, who with Henry R. Wolcott, established the first iron foundry in Denver, died December 25 of heart failure, aged 75 years. The original foundry was absorbed by the Colorado Fuel & Iron Company, following which Mr. Hooper became associated with the Denver Engineering Company.

STEWART B. McELDOWNEY, superintendent of the Chicago Steel Car Company, Harvey, Ill., died at Chicago January 1.

FREDERICK DOELLER, secretary-treasurer of Reeves & Co., Inc., Columbus, Ind., until that company was sold a year ago to the Emerson-Brantingham Company, died at his home in that city January 9.

F. E. MAXON, who for several years has been connected with the sales department of the New York office of the Independent Pneumatic Tool Company, died January 8 from appendicitis, aged 25 years. Prior to his holding this position he had been in the employ of the New York Central Railroad, advancing from a boy's work to the chief clerkship of a department.

Corrigan, McKinney & Co., Cleveland, Ohio, who some time ago sent out an inquiry for a portion of the equipment for their new steel plant, have come out with inquiries for a 40-in. blooming mill, an 800-ton hot metal mixer and about 30 cranes of various sizes. Other cranes will be required for which specifications will be issued later.

Hearings in the Government suit to dissolve the United States Steel Corporation will be resumed on Tuesday, January 21, in room N in the St. Paul Building, New York. William E. Corey, former president of the corporation, will be the principal witness examined on that day.

H. Ley & Co. have removed to Lincoln avenue and the Cincinnati, Lebanon & Northern Railroad, Cincinnati, Ohio, where they are in a position, through first class equipment and excellent location, to give prompt service.

Pittsburgh and Vicinity Business Notes

The Westinghouse Electric & Mfg. Company has placed an order for two 5-ton electric cranes for its new foundry at East Pittsburgh with the Cleveland Crane & Engineering Company, Wickliffe, Ohio.

The Weirton Steel Company, Farmers' Bank Building, Pittsburgh, which will build a new plant at Weirton, W. Va., to make cold-rolled strip steel, has placed an order with the Northern Engineering Works, Detroit, Mich., for a 30-ton electric traveling crane.

The semi-annual convention of sales managers of the Cambria Steel Company was held in Johnstown, Pa., last week, at which plans and policies for the year were discussed. J. L. Replogle, vice-president and general sales manager, presided at the sessions.

The Carnegie Steel Company has placed an order with the Cleveland Crane & Engineering Company, Wickliffe, Ohio, for two 15-ton bucket and magnet handling cranes with 85-ft. spans for the Edgar Thomson works at Bessemer. The Crucible Steel Company of America has placed a contract with the same company for a 10-ton magnet handling crane for its La Belle works, Pittsburgh.

The Jones & Laughlin Steel Company, Pittsburgh, will soon have ready for operation two blocks of coke ovens of the Belgian bee-hive type at its Aliquippa works, each block comprising 120 ovens. At present 600 ovens of this type are being built and they are expected to be completed about April 1. The company now buys a great deal of coke in the open market, but with the completion of its new ovens it will make all the coke used at the four Aliquippa blast furnaces. Coal for operating the ovens will be brought down the Monongahela River from the company's own mines.

The McClintic-Marshall Construction Company, Pittsburgh, has employed Chester & Fleming, hydraulic engineers of that city, to make an investigation and report on the water supply for its Rankin plant with a view to rebuilding the pumping plant in the near future.

The Marshall Foundry Company, Pittsburgh, has taken a contract for 3500 tons of ingot molds to be supplied to the open hearth steel plant of the Pittsburgh Steel Company, Monessen, Pa., in the first half of this year.

The Bessemer Gas Engine Company, Grove City, Pa., has sold a 165 hp. direct gas-engine-driven compressor to the Natural Gas Company of West Virginia.

The Orenstein-Arthur Koppel Company, manufacturer of portable and industrial railroads, mine and industrial cars, will about March 15 remove its general offices from the Machesney Building, Pittsburgh, to its works at Koppel, near Beaver, Pa. A local sales office will be maintained in Pittsburgh.

The monthly meeting of the Pittsburgh Foundrymen's Association was held in Engineers' Hall, Oliver Building, on Monday evening, January 13. A. W. Belden of the Metallurgical Department of the Bureau of Mines, gave a talk on "Cupola Practice" with lantern slides.

The annual banquet of the Engineers' Society of Western Pennsylvania will be held in Hotel Schenley, Pittsburgh, on Monday evening, January 27. The toastmaster will be John A. Brashear and the speakers will be F. Hopkinson Smith, engineer, and Charles M. Schwab, president Bethlehem Steel Company.

The Trumbull Steel Company's New Plant

The Riter-Conley Mfg. Company, Pittsburgh, is making deliveries of steel for the buildings of the Trumbull Steel Company's plant at Warren, Ohio. This plant will have six tin plate and six sheet mills. The buildings to be erected comprise a tin house 450 ft. long, an office building, 45 x 100 ft., and a main building to house the sheet and tin mills and the annealing department, which will be 238 x 600 ft. A machine shop, 45 x 140 ft., is about completed and has been equipped. The building to contain the galvanizing department will be 150 x 500 ft. It will be equipped with two pots and provision will be made for four more. The annealing department will at first be equipped with two sheet mill annealing furnaces and four tin mill furnaces.

The Elyria Iron & Steel Company, Elyria, Ohio, officially denies the report that has appeared in the daily press that it is planning to remove its plant to St. Louis.

Chairman Topping on the Iron and Steel Tariff

(Continued from page 207)

Why Importations of Steel Will Not Be Increased

When Mr. Topping had concluded his direct statement, he was cross-examined at some length by members of the committee and said that he was in accord with the views of the committee in the establishment of a reasonable tariff, but that he was not in accord with the views of most of the members of the committee that the rate which they sought to have established in the metal bill is going to have any influence on importations, because he said if the committee made a reduction of 30 per cent. in the tariff, he thought there would be efforts made by the manufacturers in this country, who have millions of dollars invested in their business, to meet that competition by the usual process, and he explained:

"First, there will be stimulated efforts for efficiency which will be made by them. There will be all sorts of efforts made to put in labor saving devices, and profits will be sacrificed up to the point where they cannot be further sacrificed, and when they reach that point, then labor will come in. We will not give up our markets at any time, under any conditions, so far as my efforts are concerned, and I think I can speak for a number of other manufacturers who have the power and ability to meet that condition, if it is thought desirable to sacrifice profits and earning power in order to do it."

At this point the following colloquy occurred between Chairman Underwood and Mr. Topping:

Chairman Underwood: Mr. Topping, I will say this for this end of the committee, Our purpose is not to make you sacrifice your markets. I do not think there is a man on this committee who does not prefer to have you and the other American manufacturers have a large percentage of the American market. You are entitled to it, and we want you to have it. But many of your rates in this bill are practically prohibitive. Many of the imports now, even after the reduction made by Mr. Payne—and this schedule bore the greatest reduction that was made in the Payne bill—do not amount to 1 per cent. of the market consumption.

Mr. Topping: That is quite true.

Manufacturers Must Let in Some Foreign Steel for Revenue Purposes

Chairman Underwood: If we are levying this tax for revenue—and even our Republican friends expect to raise funds to support the Government—you will have to let enough come in to produce revenue. There must be enough importations coming into the country to produce a reasonable amount of revenue. If we are not going to allow that, we might adopt the policy of building a Chinese wall of law and say that nothing shall come in.

Mr. Topping: Your total revenues under Schedule C in 1911, as I remember the figures, were about \$18,000,000. If my figures are correct, and they are approximately so, with our annual pay rolls of approximately \$322,000,000, and you bring about a reduction of only 10 per cent. in wages, you are sacrificing \$32,000,000 in order to stimulate a little increase in your revenues under Schedule C.

Chairman Underwood: We can not mix up the proposition of benefitting the people by raising wages and losing revenue. As long as we pursue this policy of raising a large portion of our revenue at the custom house—and I think this committee expects to do so—we must levy on articles at a rate that will produce revenue; and there is no reason why we should raise a large amount of revenue from one schedule and not from another. In 1909 we raised \$40,000,000 from wool. We ought to make an effort to make the iron and steel schedule bear its fair proportion of the burdens of the Government's revenue by reason of a reasonable competition. There are many of these articles in these schedules where there is competition to the amount of 30 per cent. On many of the articles in this bill which we have reduced there is not one-half of 1 per cent. of competition.

In connection with other questions by Chairman Underwood, Mr. Topping said that the total domestic labor cost of production of a ton of iron ore in this country is approximately 62 cents a ton; that is, direct labor at the mines. The foreign labor cost he said was 31 cents and

therefore in the case of European cost, it is 2 to 1. "If you put iron ore on the free list," he said, "you place us at a disadvantage of 31 cents in the labor cost in the matter of competition."

The Steel Corporation and Steel Prices

The following colloquy occurred between Chairman Underwood and Mr. Topping:

Chairman Underwood: Referring to the United States Steel Corporation, is it not a fact—I think it is considered a fact by most of the independents—that they have not unfairly driven you in your own markets? At least, most of you say that is true?

Mr. Topping: That is correct. It has been the most reasonable and fair competition, Mr. Chairman, that we have. There is no question in the world about that.

Chairman Underwood: I understand that is so. I want to ask you if this is not so: Not reflecting on the question of competition, or why they compete or why they do not compete, is it not a fact, with the immense burden of their outstanding stocks and bonds, for which they have to provide interest, and inasmuch as a great deal of their stock is held by their own employees with contracts as to its value, that it is necessary for them to maintain prices in order to keep up the value of the stock, which is in the hands of a great many people, being owned by a very large number of stockholders—

Mr. Topping: (interrupting). Yes, sir.

Chairman Underwood: In your opinion, in order to maintain their stock valuation, are they not really at a disadvantage with some of their independent competitors that do not have such a large stock valuation to maintain?

Mr. Topping: I do not think so. On the contrary, you know enough about my history, my previous connections, to indulge me in referring to myself.

Chairman Underwood: I do.

Mr. Topping: The company I represent is a pretty well conducted institution; it has that reputation. If we can fairly earn 1.8 per cent. for a period of five years on our common stock, and they can earn on an average of 6½ per cent., and absorb these overhead charges, we having only 60 cents a ton as against \$3.10, as I recall theirs to be; it shows their advantage is of a character greater than their disadvantages, and that it is a net advantage in their favor, as is indicated in the substance of one of my previous briefs, taken from a responsible financial journal, that made a comparison of the earning power of the various independent companies. I would like to refer you to that part of my previous brief, which I think you will find of interest in that connection. It also refers to the earning power of the German companies, and the English companies, with which we compete. The return to capital invested in foreign works has been greater abroad than it has been at home. Why should we impair our prosperity by exposing our markets and our labor unnecessarily to this surplus? You only stimulate us to need it by reducing our price and reducing our profit. The Government does not accomplish anything if it is the people that are hurt.

Export Prices and Home Prices

Representative Palmer of Pennsylvania, a Democratic member of the committee, asked Mr. Topping a series of questions designed to show that iron and steel products were sold abroad at prices lower than in America, as follows:

Mr. Palmer: Do you never sell in foreign countries under American prices?

Mr. Topping: We have never exported anything outside of Mexico and Canada.

Mr. Palmer: You mean the Republic?

Mr. Topping: Yes.

Mr. Palmer: Does the American manufacturer as a rule sell in producing countries under American prices?

Mr. Topping: I would say that 90 per cent. of the exports of the world are made by the Steel Corporation. They at times have found it necessary to sacrifice a great deal of their profit to meet the conditions of competition. Recently I have been reliably informed that they oftentimes had a much better price abroad than they could get at home. I think officials of that company have made that public statement.

Mr. Palmer: You do not agree with Mr. Schwab that the cost of labor in steel in America is as low as it is abroad?

Mr. Topping: I do not. He referred to it in a tonnage sense.

Mr. Palmer: What is that?

Mr. Topping: He referred to the cost per ton.

Mr. Palmer: We might as well put what he said in the record right here. In the hearings, before the committee on the investigation of the United States Steel Corporation, Mr. Schwab was asked:

How are the costs of labor in the steel and iron industry in the other countries you mention as compared with ours?

He answered:

Do you mean cost per ton, the cost of labor per ton of steel, or the average labor per man?

Mr. Danforth: The labor per man is what I had in mind.

Mr. Schwab: The cost of labor per man in the United States is about double what it is in Holland and Belgium, and I should say two and a quarter times as much as it is in Germany. I refer to the earnings of American steel workers.

Mr. Danforth: How does that affect the price of our product in this country?

Mr. Schwab: I think the cost per ton in the United States is as cheap as it is abroad, even with the added load of labor. I think the reason of that is because we manufacture in such large quantities. We manufacture under economic conditions—that I spoke of—and our tonnages are so great.

Mr. Topping: I do not agree with him.

Mr. Palmer: You think he is mistaken?

Mr. Topping: I do.

Mr. Palmer: Mr. Schwab is recognized as an expert—

Mr. Topping: (interposing). He is.

Mr. Palmer: By everybody, of course.

Mr. Topping: I think he is wrong. Taking the lighter products particularly, he is badly wrong. In some products he may be right—in a few. Take Germany. I have heard a good deal of talk about the efficiency of her labor. If you consider the progress that Germany has made in manufacture, where she has availed herself of every known economy in the way of an efficient machine, how they develop uses for by-products, such as recovering wastes and minimizing cost through that plan, and where she has intelligent workers, I am strongly from Missouri on Mr. Schwab's proposition.

Mr. Palmer: My respect for the Germans has increased about a thousand per cent. in the last two days.

Mr. Topping filed with the committee annual reports of the Republic Iron & Steel Company, comparisons of labor rates, foreign and domestic, costs of pig iron, steel billets, bar steel, etc., statement of wages paid, capital, dividends paid, etc.

W. L. C.

Westinghouse Machine Company's Financing

At a meeting of directors of the Westinghouse Machine Company at East Pittsburgh, Pa., December 28, the plan prepared by George Westinghouse for funding the extension notes of the company into 30-year bonds was declared operative as of January 1, 1913. It is noteworthy that, while the assent of only 85 per cent. in amount of the notes was required to make the plan operative, holders of over 95 per cent. have already signed. The board also accepted the offer of Mr. Westinghouse to purchase \$1,000,000 of the bonds, and thus provide the working capital needed for the rapidly increasing business of the company.

The bankers and business men of Pittsburgh, who have heartily supported Mr. Westinghouse and co-operated with him, regard the consummation of this plan as a financial transaction of great importance, not only because it involves the sale of \$6,000,000 of mortgage bonds but because it puts the Westinghouse Machine Company on a solid foundation. Mr. Westinghouse expects to give a large part of his time to the business of the company, and believes that he can make it as profitable to its stockholders as the other two Westinghouse companies in which he is now and has always been the dominant factor, namely, the Westinghouse Air Brake Company and the Union Switch & Signal Company.

The Baush Machine Tool Company, Springfield, Mass., had ready for distribution a combination catalogue and memorandum booklet. The entire issue, however, was destroyed by a fire in the Walker-Longfellow Company's printing plant, Boston, January 1.

Pennsylvania Business Legislation

Governor John K. Tener, of Pennsylvania, in his message to the Legislature, January 7, covers quite a number of matters of much interest to manufacturers and other employers of labor in that State. He believes that the present railroad commission should be abolished, but that a public service commission should be created, vested with all possible power, to have general supervision and control of corporations and individuals having to do with public utilities. He calls attention to a report received from the Industrial Accidents Commission, appointed under the provisions of an act approved June 14, 1911. He strongly urges the enactment of the workmen's compensation bill and related bills included in the report of the commission, without change in their essential features. He also suggests the advisability of creating a Department of Labor and Industry whose chief concern and duty it would be to enforce fearlessly and honestly the laws of the State to protect labor. He also recommends that no corporation, company, copartnership or association organized within or without the State, whether incorporated or unincorporated, shall be permitted to sell bonds, stocks or other evidences of property unless subject to the regulation and supervision of the proper department of the commonwealth, to the end that such securities shall represent actual value only.

The report of the Industrial Accidents Commission, referred to above, is a document of 55 printed pages, which gives a brief description of industrial accidents and their causes and the general systems of compensation tried in various countries and States and follows this with a proposed act, covering 26 pages, which provides specific damages for accidents, and also a proposed amendment to the constitution of Pennsylvania enabling the Legislature to enact laws of this character. By the provisions of this act the employer is required to pay directly to the injured employee, or his dependents, compensation for injury or for death, regardless of any fault that may have led to the accident. It also gives the text of a proposed act to provide for the incorporation and regulation of employers' mutual liability insurance associations, together with the text of a proposed act authorizing the governor to appoint a commission of seven persons, to be known as the Industrial Accidents Commission, which is to report at the meeting of the Legislature convening in January, 1915.

Even China Knows Toncan Metal

A recent incident demonstrates the value of American trade journal circulation in foreign countries. A letter was mailed in Asiatic Russia, addressed to "the Stark Rolling Mill Company, Canton." It traveled through South Manchuria, via Mukden and Shanghai; bound for Canton, China. Arriving there, the postmaster noticed a small Toncan metal trademark pasted on the corner of the envelope, and apparently formed in his mind a connecting link between the double diamond shaped sign and its use in an American trade journal which had come to his notice. He investigated the matter and found that there was a Stark Rolling Mill Company in Canton, Ohio, U. S. A., which manufactured sheets, the trademark for which was this distinctive shaped sign. The envelope was then marked "try Canton, Ohio, U. S. A.," and in due time, after traveling via Kobe, Japan, and San Francisco, it reached its destination.

Brennen-Smyth Steel Castings Company

The Brennen-Smyth Steel Company, which established a plant a few months ago at 2284 Scranton road, Cleveland, Ohio, for the manufacture of crucible steel castings, and which has been conducted as a partnership, has been incorporated under the name of the Brennen-Smyth Steel Castings Company, with a capital stock of \$200,000. The company will add to its line of crucible castings the manufacture of small open-hearth steel castings and will build a foundry addition in which will be installed two steel converters. The company will also be in the market for one or two cranes of 5 or 7 tons capacity, the equipment for a complete air system, sand blast, annealing furnace, etc. Thomas M. Brennen will be president of the new company and Malcolm N. Smyth, secretary.

Parcel Post Business

WASHINGTON, D. C., January 14.—From reports received by the Post Office Department from the postmasters of the 50 leading cities of the United States, it is shown that the number of parcel post packages sent through their offices in the first week of the new service was close to 2,000,000. A statement of the department, setting forth the business done in the first week of the service, is in part as follows:

The exact number for the 50 cities was 1,989,687. As these cities handle about half the postal business of the United States, it may be estimated that between 3,000,000 and 4,000,000 parcel post packages were mailed from January 1 to January 7.

New York and Chicago were very close in the race for leadership, the former city showing a record of 448,000 packages and the latter 438,000. In order to provide the necessary equipment and personnel to accomplish this, the Postmaster General was obliged to utilize practically the entire appropriation of \$750,000 originally allowed by Congress, and he is now asking for another appropriation of the same amount for expenditures in the remainder of the current fiscal year." W. L. C.

Ellery Drill & Tool Company Goes to Toledo

The Ellery Drill & Tool Company, Portsmouth, N. H., is removing its business to Toledo, Ohio, where it will occupy space in the new Toledo Factories Building. The name of the company will then be the Toledo Drill & Tool Company. The machinery at Portsmouth is now being loaded for shipment to Toledo, and the company expects to have the factory in operation in its new quarters by February 1. C. L. Campbell, for some years with the Standard Tool Company in Cleveland, later works manager of the National Twist Drill Company of Detroit, and for the past year supervisor of tools of the Studebaker Corporation, will be associated with this company as treasurer and general manager. R. L. Ellery will continue to be president and sales manager, while W. D. Richards, of Houghton & Richards, Inc., Boston, Mass., will be vice-president.

The Griffin Wheel Company

The Griffin Wheel Company is a new corporation now in process of formation under the laws of Massachusetts, and which will acquire the Griffin Wheel Company of Illinois, owning foundries manufacturing car wheels in various cities. This company will have an authorized capital stock of \$21,000,000, divided into \$9,000,000 6 per cent. cumulative preferred stock and \$12,000,000 common stock. The preferred is subject to redemption at any time at \$115 a share. Practically all the common stock and \$3,000,000 of the preferred go to shareholders of the Illinois corporation, officials and directors. T. A. Griffin, president Griffin Wheel Company, has prepared the following statement of net earnings:

	Av. per annum
For 17 years, 1896-1912, inc.....	\$ 517,733
For 12 years, 1901-1912, inc.....	854,713
For 8 years, 1905-1912, inc.....	974,380
First 10 months of 1912.....	1,178,158

The statement adds that there has not been a single year in the past 12 when the proposed preferred dividend would not have been earned at least one and one-half times. It is expected that the stock will be listed on the Boston Stock Exchange.

The American Railway Association's bulletin shows that on December 31 there was a net surplus of cars on the railroads of the United States and Canada of 17,058. On December 14 there was a shortage of 34,392. About one year previous, or on December 20, 1911, a surplus of 76,814 cars was reported.

The Central Coal & Iron Company, which recently blew in a new blast furnace at Holt, Ala., has broken ground for the addition of 20 ovens of the Semet-Solvay by-product type to its 40-oven plant. The Tuscaloosa Mineral Railroad has been extended from Tuscaloosa to Holt.

New York Monthly Meeting of Mechanical Engineers

At a meeting of the American Society of Mechanical Engineers, held on the evening of January 14, in the Engineering Societies Building, New York, a report on the activities of the last year was received from the New York Meetings Committee. In the absence of F. H. Colvin the report was read by Edward Van Winkle, who will preside over the committee in the coming year. For the guidance of the committee there followed a discussion regarding arrangements for the next annual meeting in New York.

Succeeding the routine business F. A. Waldron, industrial engineer, New York, who had presided, read a paper dealing with phases of shop management aside from labor. He dwelt largely upon the matter of greater efficiency in purchasing materials and supplies for manufacturing plants and of the co-relations among labor, material, overhead and profits, pointing out, among other things, that light and heat, as well as adequate tools, were necessary to profitable output, and that the matter of excellence of product should be kept in mind. Discussion of the paper elicited general approval of Mr. Waldron's remarks and the opinion was expressed that now that engineers are becoming managers they should consider the financial and business side as well as labor and machinery. Reference was made to the need of allowing a larger percentage of earnings for depreciation, especially those of a sudden character.

The Orenstein-Arthur Koppel Company, Machesney Building, Pittsburgh, has recently made a number of extensive improvements and additions to its works at Koppel, Pa., which nearly double the capacity of the plant. Its new two-story office building, in which will be centralized the executive and operating departments, is 100 x 160 ft., of brick and steel, fitted with modern conveniences. Since the new departments of the works were put in operation last year, the plant has been operated at capacity and plans for further extensions are under way.

The Peru Castings & Machinery Company, Peru, Ind., purchased January 4 from the Brown Commercial Car Company of that city the foundry and machine shop formerly occupied by the Otis Elevator Company. The new company will manufacture high grade gray iron and semi-steel castings, rough machined, or assembled, and will be ready for operation about April 1. The parties concerned in this transaction are: C. E. McCampbell, foundry superintendent; R. M. Carter, machine shop superintendent, and I. H. Barbee, mechanical engineer, all from Milwaukee, Wis.

At its annual meeting held on the evening of January 11 at the Great Northern Hotel, the Chicago Foundrymen's Club elected the following officers: James H. Wood, president; L. C. Young, McDowell Foundry Company, Chicago Heights, vice-president; C. E. Hoyt, secretary and treasurer. The following directors were chosen to serve two years: J. G. Girard, E. F. Axmer, C. B. Carter and H. S. Vrooman.

The Republic Iron & Steel Company, Youngstown, Ohio, has started the building of 68 by-product coke ovens which will be located in the suburb of Lansingville. These ovens are expected to make about 1000 tons per day, which, with the coke produced by the company at its property in the Connel'sville region, will furnish a sufficient fuel supply to run all its blast furnaces in the Youngstown district and in the Shenango Valley. The by-product gas from the ovens will be used in its finishing mills.

The St. Louis Machine Tool Company, manufacturer of tapping machines, tapping chucks and grinding and polishing machines, has removed from 1209-11 Gratiot street to 2607-09 South Broadway, St. Louis.

The Pittsburgh Steel Company, Pittsburgh, now building two blast furnaces at Monessen, Pa., is in the market for 23 electric cranes of various types and capacities.

The Machinery Markets

Although the volume of business is not what might be desired, improved conditions and a fair amount of demand are rather general, with the better reports coming from the Middle West. New York is still awaiting action on pending business, meanwhile having a fair miscellaneous demand. Reports from New England vary as to the extent to which trade has increased or fallen off, but the feeling of optimism is unimpaired. Philadelphia has had a steady run of orders for one or two tools. Business is recovering from the recent lull in Cleveland, a good industrial list is out and building projects are encouraging. Cincinnati likewise reports a gradual improvement with indications of further betterment, though its shops are hampered by a shortage of skilled labor. The feature in Chicago is a list of 150 machine tools called for by the Wabash Railroad. Trade conditions are better in Detroit and electrical equipment in particular is more active. Prospects are numerous in the Central South, where the demand for large power units is growing. Power and pump equipment are moving in good volume in Birmingham. St. Louis continues quiet. The year promises to bring an exceptional demand for electrical equipment in Texas, while demand for pumping machinery is greater than it was at this time last year. Weather conditions have hampered many lines of work on the Pacific coast and there have been comparatively few sales since the holidays, but inquiries are coming out in better number. The new year promises well for Canadian manufacturers, and already it is predicted that the high trade record of 1912 will be surpassed in 1913.

New York

NEW YORK, January 15, 1913.

While trade has not opened up in really good volume an improvement is felt in the New York market and there is a firm conviction on the part of machinery men that the near future will bring renewed activity such as characterized the closing months of 1912. Expectations are based on the fact that several good inquiries of recent date have not reached the closing point, while other prospects not quite so tangible will soon take form. The good feeling is helped also by the encouraging reports of salesmen who are in daily touch with those who use machinery. Meanwhile the amount of miscellaneous orders is fair and a sufficient cause for satisfaction. There is very little tariff talk heard, and prospects in that direction cannot be said to be causing any outward uneasiness. Salesmen and managers in the next few days will devote a great deal of time to the dual automobile show now open in New York, as it affords them a good opportunity to come into personal contact with many who are large buyers of tools for the automobile industry. One enterprising manager has compiled a typewritten list and in a systematic way is looking up the exhibitors in whom he is interested.

The United States Government has an inquiry out for four turret lathes of 6½ in. spindle capacity to be delivered at the Frankford Arsenal, Philadelphia, Pa.

The Mohawk Valley Mfg. Company, Oneida, N. Y., formerly of Utica, maker of carriage hardware and automobile specialties, has plans under way for a one-story addition 50 x 100 ft. to its factory. W. Fisher and V. Murray, Oneida, are the contractors, and W. Fisher, Central Hotel, Oneida, should be addressed for particulars.

The St. Louis Machine Tool Company, manufacturer of tapping machines, tapping chucks and grinding and polishing machines, 2607-2609 South Broadway, St. Louis, is arranging a new catalogue file and will be pleased to receive catalogues of all appliances used in a machine tool manufacturing plant.

The Century Cabinet Company, Fort Plain, N. Y., has awarded contracts for the erection of its new plant for the manufacture of office and library furniture. It will soon be in the market for entire new equipment, consisting of cut-off saws, rip saws, jointers, planers, mortising machines, sanders, dove-tailing machines, etc., together with the necessary motors for running each machine.

The Brown Shoe Company, Inc., Millbrook, N. Y., with a capital stock of \$16,000,000, has filed incorporation papers with the Secretary of State and will engage in the manufacture of shoes, etc. S. B. Howard, Millbrook; H. S. Gould, New York City, and E. E. Holmes, Brooklyn, are the incorporators.

The Duplex Molding Sander Company, Hornell, N. Y., has been incorporated for the manufacture of a patent duplex molding sander for which letters patent have been issued to W. F. Smith and J. C. Prims, president and vice-president respectively of the new company.

The Oswego Machine Works, Oswego, N. Y., Neal Gray, manager, has plans under way for a two-story brick addition, 62 x 120 ft., brick, mill construction, which will be erected early in the spring on property recently acquired adjoining its plant.

The Oneida Community, Ltd., manufacturer of silverware, has commenced work on construction of its factory addition at Sherrill, N. Y. The new building will be three stories, structural steel and reinforced concrete and will cost about \$120,000.

Work is being rushed on the shoe factory, 60 x 100 ft., which is being erected by Truitt-Schwab, Inc., on Water street, Binghamton, N. Y., and same will soon be ready for equipment.

Work is progressing on the drug and chemical factory, 50 x 97 ft., two stories, being built by Loveland & Co. on Chenango street, Binghamton. Special equipment will be required.

The Ball-Washburne Motor Company, Inc., Rochester, N. Y., has been incorporated with a capital stock of \$25,000 and will engage in the manufacture of motors, etc. W. H. Ball, C. H. Washburne and E. R. Ball are the directors.

The Flaxen Fibre Down Company, Lockport, N. Y., J. Sydney Spaulding, president, has leased the extensive factory at Marion and Robinson streets and the Erie Railroad, North Tonawanda, N. Y., formerly occupied by the King Construction Company, and will enlarge and equip the building for the manufacture of fibre specialties and electric insulating material.

The Federal Milling Company, Lockport, N. Y., has completed plans for the erection of a large flour mill and two grain elevators at North Tonawanda early next spring. The milling plant will be located on the Niagara River and Main street and will have Barge Canal and railroad switching service.

The National Brewing Company, Syracuse, N. Y., will build and equip a bottling works, 41 x 56 ft., at its plant on Burnett avenue.

The Henry Cheney Hammer Company, Little Falls, N. Y., G. Waterman, president, has commenced the construction of its new manufacturing building, 70 x 108 ft., two and three stories, on West Mill street.

The Niagara Radiator & Boiler Company, North Tonawanda, N. Y., E. C. Andrews, president and general manager, has closed contracts for the erection of a building, 100 x 600 ft., to be used as a stockhouse and for extension of its equipment and boiler departments. The company will also build at once an addition, 100 x 200 ft., to its radiator foundry.

The Buffalo Bolt Company, North Tonawanda, N. Y., is adding to its plant at East avenue and the New York Central and Erie Railroads a tumbler building, 80 x 150 ft., and an extension of its forge building, 80 x 90 ft. A large amount of new machinery will be installed.

The Buffalo Co-operative Stove Company, Buffalo, N. Y., Edward Kener, manager, is receiving bids for a small addition to its plant at Tonawanda street and the New York Central Railroad.

The Pease Oil Company, Buffalo, H. T. Upson, president, is adding an extensive warehouse building to its plant at Broadway and Schmarbeck streets and the West Shore Railroad, necessitated by the large increase in its business. A portion of the new building will be equipped for oil compounding, and considerable machinery will be required.

A foundry building, 100 x 170 ft., is being erected at the plant of the Buffalo Steam Pump Company, Oliver street and the Erie Railroad, North Tonawanda, N. Y., and contract is also about to be let for a new machine shop and a 5-story stockhouse.

New England

BOSTON, MASS., January 14, 1913.

The experiences of manufacturers and dealers in the first half of January vary widely, some reporting a good increasing trade, others a continuance of the holiday lethargy. The opinion that the year will be prosperous is apparently unanimous. The privately expressed analysis of the general situation by New England bankers is wholly favorable. They will be very much surprised if the total business of the year is not large and profitable.

The auction sale of the equipment of the United Cork Seal Company, Millis, Mass., last week, was significant of the current demand for standard machine tools, for very high prices were paid, as compared with the present lists of the manufacturers. For example a 14-in. x 6-ft. engine lathe sold for \$225, the new price being \$275; a No. 18 Bliss press, listed at about \$110, brought \$100; a Gould & Eberhardt shaper sold for \$335, only \$65 below the catalogue; and a milling machine, listed at \$700, went at \$610. Manufacturers and dealers deduce from these sales, which were typical of the entire equipment, outside of special machinery, that not only is the market an active one, but that present prices are not by any means high. The lists are going up here and there and the movement toward a higher standard seems to be accelerating. The auction sale of the business and equipment of the Dwight Slate Machine Company, Hartford, Conn., builder of sensitive drilling machines, small gear cutting machines and metal marking machines, will be held this week, and the results will be watched with unusual interest, especially as to prices.

The National Folding Box & Paper Company, New Haven, Conn., will erect a new building, 100 x 250 ft., four stories, of brick, mill construction.

The New Departure Mfg. Company, Bristol, Conn., will add two stories to its office building, which is 62 x 215 ft.

P. & F. Corbin, New Britain, Conn., of the American Hardware Corporation, is planning the addition of three stories to a four-story factory building, 60 x 216 ft. A new factory is also contemplated.

Additions to general manufacturing plants of New England include the following: Scat Mfg. Company, Hartford, Conn., addition 22 x 30 ft.; Baer Bros., Stamford, Conn., factory 20 x 201 ft., one story; Summit Thread Company, East Hampton, Conn., one-story factory, 75 x 123 ft.; J. T. Robertson Company, South Manchester, Conn., two-story addition, 30 x 140 ft.

Philadelphia

PHILADELPHIA, PA., January 14, 1913.

Several moderate lots of tools for shop extension purposes are in sight and there has been a steady demand for single tools and small groups of equipment, which in the aggregate make a fair volume of business. Merchants as well as manufacturers entertain optimistic views as to the development of new business in the near future. The prospect of changes in the tariff on machine tools, while being given some consideration by manufacturers, is not expected to be an important factor as far as the prospective buyer is concerned. From time to time both manufacturers and merchants have quoted against small lot inquiries from local railroads, but so far very few orders have come out. More active buying of this character is expected to develop with the spring months. Locomotive shops are promised, with orders now in hand, continued activity during the greater part of the year. Foundries making machinery castings find a trifle more active demand, particularly in steel castings. In a number of cases melting capacity is at the highest rate. The demand for second-hand machinery as well as power equipment is comparatively quiet.

The report that the Bateman Mfg. Company, Grenloch, N. J., would erect a four-story brass foundry, 50 x 100 ft., is incorrect. This company recently had its iron and brass foundry badly damaged by fire, but the plant has been largely reconstructed and is now in full operation, although not completed in all departments. In rebuilding its foundry its capacity was materially increased.

The Merchant & Evans Company, which recently removed its tin plate dipping plant from this city to Warwood, W. Va., has let contracts for the remodeling of its local plant at Twentieth and Washington avenue, so as to increase the facilities of departments for the manufacture of automobile parts, ventilators and babbitt metal. The floor space will be increased

about 50 per cent. Considerable machine tool equipment for the new additions have already been purchased.

The Pennsylvania Equipment Company, West End Trust Building, is in the market for a second-hand 15-ton capacity Browning Locomotive crane.

Advices from the Carnegie Steel Company, Baltimore, Md., state that the recent fire damage to its plant will not be as large as was originally stated. The fire was confined to the fabricating shop, no other buildings being injured. The roof trusses of the fabricating shop dropped and did some damage to the machinery equipment, particularly the motors. Repairs will be made at once.

B. F. Sheeder and Joseph A. Heine, Reading, Pa., are planning the erection of a new planing mill at Nineteenth and Cotton streets in that city. The new plant is to have a dry kiln and an engine and boiler house. Those back of the new project are now interested in a mill being operated at Mifflin and Spruce streets.

The Loomis-Manning Filter Mfg. Company, whose plant at Sedgely avenue and Dauphin street was recently destroyed by fire, has acquired the plant formerly occupied by the Morris Engineering Company at Thirty-seventh and Reed streets. The company is now operating in the new plant but only in a small way. Some additional plant equipment will be required. The ultimate capacity of the new plant will be four times that of the one recently burned.

Ballinger & Perrot, engineers, have awarded a contract for the erection of a 60 x 130 ft. addition to the machine shop of the American Engineering Company at Cumberland street and Aramingo avenue. Purchases of its machine tool equipment will be made by the company direct.

Announcement is made of the adjudication of the Keystone Elevator Company, of this city, as a bankrupt. Alfred Driver has been named as referee.

The Sherwood Distilling Company, Sherwood, Md., will, it is stated, erect a two-story building, 98 x 98 ft., at its plant at the above location for the manufacture of cattle and stock products.

Chicago

CHICAGO, ILL., January 14, 1913.

Since the first of the year there has been a slight lull in general buying of machine tools in this market, although two or three instances of important purchases are noted, including a number of lathes, planers and milling machines for the Shaw-Walker Company at Muskegon, Mich., the aggregate value of which approximates \$5,000. The same company is also figuring on the installation of a punch press department, which will require about \$7,000 of machinery. The Aluminum Products Company at Lamont, Ill., has bought a number of tools for its machine shop and is also in the market for presses, which will add about \$10,000 to the total of its purchases. The Wabash Railroad has issued a formidable list of tools containing some 150 items for its new shops at Decatur, Ill., the list being given herewith. Interest also attaches to the negotiations of the Chicago & Northwestern Railway for a tract of 1000 acres located about 55 miles north of Chicago between Kenosha and Racine, the expectation being that on this tract the company will build extensive shops. The Illinois Central Railroad is this week moving into its new shops at Centralia, Ill.

Those machine tool builders who have thus far refrained from selling very far into the future are now reaping the benefits of the situation, which finds some of the larger manufacturers from three to six months behind in their deliveries. This is especially true of planers, shapers and lathes.

The Wabash Railroad List

The following list of machines is submitted by the Wabash Railroad from St. Louis:

- One 90-in. driving wheel lathe.
- One 100-ton vertical press.
- Two 8-ft. 4-in. boring and turning mills.
- Two 42-in. vertical boring mills.
- One 42-in. vertical boring mill.
- Three 36-in. vertical turret lathes.
- Three 24-in. vertical turret lathes.
- One horizontal boring mill.
- Three 32-in. pillar type crank shaping machines.
- Four single-head 24-in. back-gear crank shaping machines.
- Two 16-in. single-head back-gear crank shaping machines.
- Two 20-in. back-gear crank shaping machines.
- One 20-in. traveling head slotting machine.
- Two 18-in. slotting machines.
- One 30-in. engine lathe.
- Three 24-in. lathes.
- Seven 20-in. engine lathes.

Two 20 x 20 x 24-in. crank planing machines.
 Eight 31-in. radial drilling machines.
 Two 6-ft. radial drilling machines.
 Three 50-in. vertical drilling machines.
 Seven 20-in. drilling machines.
 Two 20-in. brass turret lathes.
 One 16-in. tool room lathe.
 One 50-in. vertical milling machine.
 Two vertical spindle knee type milling machines.
 Two horizontal milling machines, range 30 x 10 x 19-in.
 One 3 x 36-in. turret lathe.
 Three 2 x 24-in. turret lathes.
 Twelve single wet tool grinders, wheel 16 x 2 1/2 in.
 Five dry tool grinders, wheel 16 x 2 1/2 in.
 One combination drill and tool grinder, capacity 1/4 to 9/8 in.
 Three 8-in. disc grinders.
 One portable electric tool post grinder.
 One link grinder.
 One automatic grinder for piston rods, valve stems, etc.
 One centering machine capacity 1/2 in. to 7 in.
 One 2-spindle centering machine, capacity round bars 1/4 in. to 4 in.
 One 8 x 15-in. fan power hack saw.
 Four portable valve setting machines.
 Two 4 1/2-in. portable boring bars.
 One locomotive pedestal facing machine.
 One 3/4 x 2-in. triple-head bolt cutter.
 One 36-in. in dia. cold cutting-off saw.
 One tire furnace.
 One 14-ft. plate bending rolls, capacity 1 1/4-in. plate.
 One 60-in. single punch, capacity 1 1/2 in. through 1 in.
 One 48-in. single shear, capacity, 1 1/4-in. plate.
 One rotary bevel shear, capacity 1-in. plate.
 One horizontal punch, throat 12 in., capacity 1 1/4 in. through 1 in.
 One 1 1/2-in. triple-head staybolt cutter.
 One flue sheet drill press.
 Two 6-ft. plain radial drilling machines.
 Four 36-in. plain radial drilling machines.
 Three 32-in. standard vertical column drilling machines.
 One four-spindle staybolt drilling machine.
 One 150-ton universal flanging press.
 One 1500-lb. hydraulic accumulator.
 One duplex 4 x 12-in. hydraulic pump.
 One annealing and flanging oil furnace for sheets 12 x 15 ft.
 One portable pneumatic mud ring riveting machine.
 Four pneumatic staybolt nippers.
 Two staybolt breakers.
 One oxy-acetylene welding and cutting plant.
 One 1500-lb. single-column steam hammer.
 One special 1600-lb. single-frame steam hammer.
 One 600-lb. single-column steam hammer.
 One 200-lb. helve hammer.
 One 100-lb. helve hammer.
 One 4-in. forging machine.
 Two 2-in. forging machines.
 One blacksmith bar shear, capacity 1 1/4 in. rod, 1 in. square, x 1/2 in. flat.
 Two blacksmith forge blowers.
 Two forging machine furnaces, 2-in. and 4-in.
 Nine hammer furnaces, annealing and case hardening.
 One combination tapering roll and swedge.
 One combination hydraulic spring banding and stripping press.
 One combination shearing and hot punching machine.
 Ten 500-lb. anvils.
 Eighteen 400-lb. anvils.
 Two 3-ton jib cranes.
 Two 4-ton jib cranes.
 Six 2-ton jib cranes.
 Six 1-ton jib cranes.
 One 10-ft. plate bending rolls.
 One combination punch and shear, 48-in. throat, capacity 1 in. through 1 in.
 One flue welding machine.
 One flue cutting and scarfing machine.
 Four oil flue welding furnaces.
 One pipe threading and cutting machine.
 One ring and circular shear.
 One 120-in. squaring shear.
 One heavy patent slip roll forming machine.
 One lever punch, capacity 1/2 in. through No. 14 sheet.
 One grooving machine, capacity 30 in. in length, No. 24 sheet.

The Garden City Foundry Company, Chicago, has completed its plans for the building of its foundry pattern storage and office building on Archer avenue near Ashland. The new buildings will cost about \$25,000.

The Doxameter Company, Chicago, has been incorporated with a capital stock of \$25,000 to manufacture gas engine attachments for registering gasoline. The company can be addressed in care of George H. Flanagan, 3936 North Forty-fourth avenue.

The Goodwin Car Company, Otis Building, Chicago, is erecting a one-story factory, 60 x 200 ft., at Sixty-third street and Forty-eighth avenue. The cost is estimated at \$20,000.

The Standard School Heater Company, Chicago, has been incorporated with a capital stock of \$10,000 to manufacture and deal in furnaces, heating and ventilating apparatus. The company may be addressed in care of Schuyler C. Wilson, Valparaiso, Ind.

The Peoples Power Company, Moline, Ill., is spending the sum of \$200,000 in an extension of its power facilities, which will include the purchase of a 12,500-kw. generating unit.

The Alton, Granite City & St. Louis Traction Company has plans completed and will begin the construction of a new power plant at Alton, Ill.

The large plant of the Tamms Silica Company, Tamms, Ill., was destroyed by fire, January 4, at an estimated loss of \$40,000. The company states that it will rebuild as soon as financial adjustments are made.

The P. A. R. Airboat Company, Milwaukee, Wis., has been incorporated with a capital stock of \$10,000 by Forest E. Post, William Ruehl and William J.

Morgan. The company proposes to build hydro planes. The N. B. Gaston's Sons Scale Company, Deloit, Wis., has in contemplation the enlargement of its present foundry.

The Perfix Radiator Company, Racine, Wis., has been organized with an authorized capital stock of \$15,000 to continue the manufacture of automobile radiators, pumps and cooling devices.

The Milwaukee Lithographing Company, Milwaukee, Wis., has taken out a permit providing for the erection of a mill construction building, 130 x 133 ft., two stories. It will be located at Sycamore and Twenty-second streets, and will cost \$30,000.

The Central Machine & Supply Company, Davenport, Iowa, has been incorporated with a capital stock of \$35,000 to manufacture and market vending machines. The officers of the company are Frederick Werentin, Jr., president and treasurer, and Alexander J. Lumsden, vice-president and secretary.

The Farley & Loetscher Company, Sioux Falls, S. D., in order to provide necessary facilities for its growing business, is building an addition, 100 x 120 ft., to its sash and door factory.

Cleveland

CLEVELAND, OHIO, January 14, 1913.

While the machine tool market is not active, business with dealers has recovered somewhat from the lull it experienced in the holiday season. Aside from one order for eight machines business was largely in single tool orders. An Ohio manufacturer who before the holidays was figuring on buying considerable machinery equipment for plant extensions has come out with a definite list of 62 tools, aggregating about \$30,000. Several new building projects in the line of factory extensions and new plants have developed since the first of the year and these will result in the buying of machinery later. The local demand for second-hand machinery is not active, but considerable inquiry is coming from other districts.

The Parish & Bingham Company, Cleveland, maker of sheet metal stampings, has purchased a nine-acre site on Madison avenue, N. W., on which it will begin the erection of a large plant in the spring. The company's business has grown to such an extent that its present quarters on Hamilton avenue are too small.

The Ohio Automatic Valve Company, Cleveland, has been incorporated with a capital stock of \$5,000 by B. E. Wolliger, David Falk and others.

The Victor Electric & Stamping Company, Cleveland, has been incorporated with a capital of \$10,000 by Morris Goldreich, Ben Feniger and others.

The Victoria Metal Company, Erie, Pa., is enlarging its foundry by the erection of a 50 x 100 ft. extension. This company will add to its present line the manufacture of white metal castings.

The Superior Metal Products Company, Elyria, Ohio, has increased its capital stock from \$15,000 to \$50,000.

It is reported that the Cataract Rubber Company, Wooster, Ohio, will erect a large addition to its plant for the manufacture of solid rubber tires.

The stockholders of the Hydraulic Pressed Steel Company, Cleveland, have been asked to approve an increase in the company's capital stock from \$400,000 to \$1,200,000. The company is at present making extensions to its plant. It manufactures pressed steel automobile frames, brake drums and other pressed steel products. It is considering adding to its present line the manufacture of pressed steel barrels.

The National Carbon Company, it is reported, will erect a large addition to its Fremont, Ohio, plant.

The National Tool Company, maker of milling cutters, counters, bores, etc., has moved its new plant on West 112th street near the Lake Shore Railroad, Cleveland. The company now occupies a three-story building 30 x 150 ft. of fireproof construction. Adjoining the main building is a power plant. The new quarters give the company about four times its former capacity.

The Mohawk Rubber Company, Akron, Ohio, has been incorporated with a capital stock of \$350,000. The new company has taken over the plant of the Stein Double Cushion Tire & Rubber Company and it is stated will erect additions to the present plant.

The American Tire & Rubber Company, Akron, Ohio, is planning the increase of its capital stock from \$200,000 to \$500,000 with a view of extending its business and erecting additional factory buildings.

The International Harvester Company will erect a six-story factory building 70 x 200 ft. adjoining its

Akron, Ohio, plant, a portion of which was recently burned. The company plans the expenditure of \$300,000 for the addition. The new building will be of fireproof construction.

The plant of the Toledo-Silica Sand Company, Silica, Ohio, was burned January 6. It included a main building 40 x 170 ft., four stories. It is stated that the plant will be rebuilt as soon as possible. The company's offices are located at 436 Ohio Building, Toledo.

The plant of the Houghton Elevator & Machine Company, Huron & Lafayette streets, Toledo, Ohio, will be enlarged by the erection of a one-story brick addition 80 x 114 ft.

Cincinnati

CINCINNATI, OHIO, January 14, 1913.

While there has been no marked improvement in the machine tool business in this section, a gradual change for the better is noted, and a few firms have booked a considerable number of orders lately, mostly for single tools. Indications point to a fair business during the next three months from both the railroads and auto truck and automobile manufacturers.

The jobbing foundries are nearly all very busy, and as the condition of this particular branch of the manufacturing industry is considered a trade barometer, the natural inference is that business is getting to a fairly satisfactory level.

Second-hand machinery dealers also report some improvement. A labor shortage is annoying several sheet metal workers, and skilled labor in all lines is also scarce.

The Cincinnati Steel Castings Company is building a brick addition, 75 x 80 ft., to its plant, in which will be installed considerable additional equipment. Included in the list of the company's requirements not yet purchased is a steel converter.

The George Automatic Roller Bearing Company, Hamilton, Ohio, has been incorporated with \$550,000 capital stock by C. E. Heister, C. R. Greer and others, and it is announced that a large manufacturing plant will be erected during the ensuing year.

At the annual stockholders' meeting of the Weir Frog Company, Cincinnati, held last week, Basil W. Rowe retired from the presidency, and was elected chairman of the board of directors. He was succeeded by O. DeGray Vanderbilt of New York, who will move to Cincinnati. Harry Darlington, Jr., Pittsburgh, is a new director in the organization. H. W. McCandless was re-elected vice-president and secretary, and N. O. Goldsmith, general manager.

The Bryan Show Case Company, Bryan, Ohio, which recently lost its factory by fire, has decided to rebuild at an early date.

Simpson Brothers, Portsmouth, Ohio, have decided to add a repair department to their foundry and machine shop. Practically all necessary equipment has been purchased.

It is reported that the Kroger Grocery Company, Cincinnati, has tentative plans under way for building a garage and repair plant to take care of the company's large number of auto truck delivery wagons. The proposed building will be about 150 x 200 ft., two stories and of reinforced concrete construction.

John Richey, Dayton, Ohio, is interested in a proposed woodworking plant to be erected in Dayton this year. If present plans go through, considerable power transmission and woodworking equipment will be required.

The Stewart Iron Works Company, Covington, Ky., is installing machinery in its new auto truck factory, recently mentioned. A full list of the necessary machine tools needed has not yet been made up.

The addition to the plant of the Herr Engine Company, Portsmouth, Ohio, recently mentioned, will be 80 x 100 ft., one story, and of brick and steel construction. The Devore-McGormely Company, Toledo, Ohio, has contract for putting up the building.

Tecumseh Sherman, of New York, will address the Cincinnati Business Men's Club at the noonday luncheon, January 17, on the subject of "Workmen's Compensation."

The Bridgeport Auto Company, Wheeling, W. Va., has been incorporated with a nominal capital, with the intention of manufacturing automobiles and motor boats. J. Bernard Handlan is one of the principal incorporators.

A large garage and repair shop will be erected on the Reading road, Cincinnati, by M. T. Kennett of 325 Scott avenue, Covington, Ky. A number of small machine tools will be required for equipping the repair shop.

The Triumph Electric Company, Oakley, Ohio, has recently closed contracts for over \$90,000 worth of electrical machinery to be shipped to Canadian customers.

A large quantity of structural material will be required for a million-dollar hotel building to be constructed at Dayton, Ohio, by the Allyn Company, Second National Bank Building, Cincinnati.

The Dayton, Xenia & Southern Traction Company, Dayton, Ohio, has had plans prepared for a large transformer station to be erected at Belmont, Ohio.

The Pennsylvania Railroad Company is purchasing considerable woodworking and other equipment for a large new planing mill and furniture factory now being erected at Columbus, Ohio. Kirk & Blum, Cincinnati, sheet metal workers, have contract for the installation of dust collecting and hot-blast heating systems to be installed in the new buildings.

In addition to extensive improvements to be made to the Cincinnati plants of the Columbia Gas & Electric Company, recently mentioned, it is reported on good authority that it has under way plans for an immense hydroelectric plant to be erected on New River, near Hinton, W. Va. The company proposes to furnish current for a number of cities, including Cincinnati, and if the present plans go through a large amount of miscellaneous power equipment will be required.

J. M. Rice, Dry Ridge, Ky., is in the market for a second-hand band saw and a small planing machine.

Detroit

DETROIT, MICH., January 14, 1913.

The past week has shown at least a partial recovery from the lethargy of the preceding fortnight, and while not a great deal of new buying was done the business carried over from last year for present delivery has helped swell the total considerably. A fair number of single tool orders were taken, together with a few of better proportions, and indications point to a still greater resumption of activity toward the end of the month. Some little demand is being noted for electrical equipment, and one contract for an installation of considerable size has been awarded by a suburban municipality. Makers of jigs and dies and experimental machinery report a good volume of orders on their books. Building conditions are quiet.

The Keeton Motor Car Company, Detroit, has acquired a site of one and one-half acres at Breckenridge street and the Michigan Central Railroad, improved with four buildings, and will at once remove from its temporary plant at Wyandotte, Mich. Arrangements for the erection of a fifth building are now being made.

The Ideal Belt Company, Detroit, has taken out a building permit covering the erection of a two-story factory, 54 x 80 ft., to cost about \$6,000.

The Continental Utilities Company of Lansing has been incorporated under Delaware laws with a capital stock of \$3,000,000 for the stated purpose of engaging in a general lighting, heating and power business. John F. McLean, Detroit; Schuyler F. Seager, Lansing, Mich., and William T. McCaskey, Marinette, Wis., are named as incorporators.

George W. Graves, architect, Detroit, has awarded the contract for the erection of a two-story brick factory, 113 x 120 ft., for Reuben Miller, to cost about \$20,000.

The C. C. Duell Company, Detroit, manufacturer of special equipment, is taking bids for an addition to its factory, which is to be immediately erected.

The plant of the Houghton-Jacobson Printing Company, Detroit, was destroyed by fire January 8, entailing a loss estimated at \$85,000. Immediate steps will be taken by the company to resume operations.

The Bad Axe Brick & Tile Company, Bad Axe, Mich., which was recently incorporated to take over the business of Gascho Bros., manufacturers of cement products, etc., is planning to enlarge its business and install additional equipment during the present year. Arthur Gascho is general manager.

The Bird's Eye Veneer Company, Escanaba, Mich., has been incorporated with a capital stock of \$60,000, and will erect and equip a veneer factory, 100 x 360 ft. J. C. Kirkpatrick is identified with the new enterprise.

The Roundhouse of the Detroit, Bay City & Western Railroad, at Bay City, Mich., was destroyed by fire January 7, entailing a loss of \$20,000.

The Fuller & Sons Mfg. Company, Kalamazoo, Mich., has been incorporated with \$100,000 capital stock to take over the business of the Michigan Automobile Company, manufacturer of automobile parts. It is intended to enlarge the business.

The United States Brass & Iron Company, Flint,

Mich., owing to its rapidly increased business, will erect a new foundry building, 75 x 200 ft.

The Michigan Cold Storage Company, Kalamazoo, Mich., has completed plans for the erection of a five-story cold storage plant, to cost \$50,000, for which some equipment will probably be required.

A dispatch from Alpena, Mich., states that a syndicate headed by E. P. Smith, Detroit, will shortly begin the operation of a quarry and stone crushing plant, which will mean the investment of \$1,500,000.

The Wyandotte Foundry Company, Wyandotte, Mich., has increased its capital stock from \$50,000 to \$60,000.

The Detroit Flash Curtain Company, Detroit, has been incorporated with a capital stock of \$25,000 to manufacture automobile curtains, windshields and other accessories. The incorporators are Fred. J. Schaffer, William H. Goodfellow and Harry M. Vaughn.

The plant of the Saginaw Basket & Veneer Company, Saginaw, Mich., was destroyed by fire January 10, entailing a loss of \$25,000.

Indianapolis

INDIANAPOLIS, IND., January 14, 1913.

Indianapolis has been selected for the joint convention of the American Supply and Machinery Manufacturers' Association, the National Machinery and Supply Dealers' Association and the Southern Supply and Machinery Dealers' Association, April 10 to 12. Nelson A. Gladding of E. C. Atkins & Co., Indianapolis, is president of the American Association; S. M. Price, Norfolk, Va., is president of the Southern Association, and W. L. Rodgers, Pittsburgh, is president of the National Association.

The Universal Tractor Company, Indianapolis, has been incorporated with \$100,000 capital stock to manufacture tractors and farming implements. The directors are T. B. Funk, W. D. Myers and J. E. Kepperley.

The Ray Harroun Company, Indianapolis, has been incorporated with \$50,000 capital stock to manufacture automobiles. The directors are Ray Harroun, U. G. Baker and E. G. Sourbier.

The Modern Cabinet Company, Indianapolis, has been incorporated with \$35,000 capital stock to manufacture furniture. The directors are C. C. Becker, L. G. Bauer and A. A. Becker.

The Winger-Blume Mfg. Company, Walcott, Ind., has been incorporated with \$10,000 capital stock to manufacture washing machines. The directors are William Winger, A. K. Winger and E. C. Blume.

The Kline-Macy Foundry & Machine Company, Noblesville, Ind., has been organized to do a general foundry and machine shop business by Charles B. Macy, George C. Kline, E. V. Brigham and others.

The Elnora Oil & Gas Company, Elnora, Ind., has been incorporated with \$15,000 capital stock to operate oil and gas wells. The directors are H. H. Beaver, J. E. Pershing and P. A. Hasler.

The Anderson Folder Company, Lafayette, Ind., has been incorporated with \$60,000 capital stock to manufacture folding machines. The directors are R. W. Anderson, W. F. Maish and A. H. DeVault.

The Ford & Johnson Company, Michigan City, Ind., manufacturer of furniture, has been sold at receiver's sale to Harry Wehmer, Cincinnati, trustee for the bondholders, for \$406,000. The sale includes the company's property at Chicago. Bonds to the amount of \$300,000 were held against the Michigan City plant.

The Bostege Furniture Company, Evansville, Ind., has issued \$60,000 additional capital stock.

The Hunter Oil Company, Bloomfield, Ind., has been incorporated with \$10,000 capital stock to drill for oil and gas. The directors are George Morgan, Philip J. Harrah, Charles B. Heim, Charles E. Henderson and Frank L. Burke.

The Indiana Stove Works, Evansville, Ind., has increased its capital stock from \$200,000 to \$300,000.

The Galvin Specialty Company, Anderson, Ind., has been incorporated with \$100,000 capital stock to manufacture gas generating devices. The directors are H. J. Galvin, J. L. Forkner and William R. Poland.

The General Repair Machine Company, Connersville, Ind., has been incorporated with \$5,000 capital to do a general repair business. The directors are J. H. Mount, G. W. Jordan and A. Adams.

The American Castings Company, Mishawaka, Ind., has been incorporated with \$25,000 capital stock to do a castings business. The directors are W. H. Rockhoff, F. W. Rockhoff and P. H. Zellers.

The Modern Concrete Works, Clay City, Ind., has been incorporated with \$10,000 capital stock to manu-

facture concrete. The directors are George C. Kaiser, O. P. Danier and I. H. Beatty.

The Roller Electric Company, Anderson, Ind., has been incorporated with \$10,000 capital stock to manufacture electric machinery. The directors are E. M. Roller, E. C. Toner and R. H. Brandon.

The Central South

LOUISVILLE, KY., January 14, 1913.

The machinery business continues to develop at a normal rate, prospects being numerous and a fair number of orders being received. While no features of unusual importance have been noted, the general situation is described as eminently satisfactory. Most of the new business coming into the market is from going concerns, these expanding along substantial and legitimate lines, while public service corporations as a rule are doing a lot of improvement work. Many of the smaller communities through the Central South are being provided with waterworks, lighting plants and other modern conveniences, the result being a stimulation of larger power units.

Business in machinery in this market for 1912 is reported by the Louisville Board of Trade as follows: Receipts, 13,082,000 lb.; shipments, 23,478,600 lb. The report indicates that while a lot of machinery is being bought for local consumption from outside manufacturers, local interests are holding their own. Receipts of finished iron and steel for the year were 85,000 tons, and shipments amounted to 21,000 tons. Pig iron receipts were 107,100 tons. Receipts of pig iron in 1911 were but 83,000 tons.

The Moran Flexible Steam Joint Company, 115 North Third street, Louisville, is in the market for a boring machine. Used equipment is preferred. E. B. Jenkins is superintendent of the company, which has enlarged its shops materially in the past few months.

The Southwestern Development Company, Louisville, has been incorporated with \$50,000 capital stock to develop the town of Des Moines, N. M. It is stated that an electric light plant and other improvements will be provided for. P. N. Clarke, Columbia Building, Louisville, is the secretary of the company.

The Ballard & Ballard Company, Louisville miller, has ordered a 100-kw. generator from the James Clark, Jr., Electric Company, Louisville. The new unit replaces a 40-kw. generator of the same manufacture which has been in service for 11 years.

L. R. Veatch & Co., Louisville, has been incorporated with \$20,000 capital stock to deal in mill machinery. The concern has a machine shop at First and A streets and will make and repair flour mill equipment. No new tools will be required for the present.

The Reinforced Bar Seat Company, Louisville, has been organized with Charles A. Koerner, president, and Emile B. Bourlier, general manager, to manufacture a metal specialty for use in concrete construction. The manufacture of the goods has been arranged for at the plant of the Louisville Cornice & Roofing Company. Some new machinery was added to do the special work required.

The Louisville & Nashville Railroad Company, with general offices in Louisville, has plans for the construction of new shops at Howell, Ind., a short distance from Evansville, Ind. The estimated cost of the improvement is \$200,000.

The Seelbach Hotel Company, Louisville, is about ready to go ahead with plans for a \$50,000 power house which it has had in view for some time. A city ordinance closing an alley in the rear of the hotel will have to be passed before work can actually be begun.

Cogar & Co., Midway, Ky., are having plans made for the erection of a feed mill. The concern will manufacture a stock preparation, for the most part.

The city of Lexington, Ky., is considering the erection of a plant for the disposal of garbage. Address W. H. McCorkle, commissioner of the department of public works.

The city lighting plant at Paducah, Ky., is to be improved through the addition of a new dynamo. This and other proposed additions to the equipment will cost \$16,500. Address the Board of Public Works.

The plant of the William A. Murray Spring Mfg. Company, 132 Sycamore street, Covington, Ky., was damaged by fire January 7, the estimated loss being \$25,000.

The Henderson Mining & Mfg. Company, Henderson, Ky., has decided to build a cold storage plant at a cost of \$10,000. J. T. Wilson is president of the company.

The Ideal Supplies Company, Ludlow, Ky., is to build an ice factory with a daily capacity of 30 tons.

It is now going into the sand business and will need conveyors, washers, etc., for handling this material. William S. Ludlow is vice-president of the company.

The Fulton Light & Power Company, Fulton, Ky., control of which was recently purchased by G. K. Mittenberger, St. Louis, is to be improved by the installation of equipment to cost \$40,000.

The C. L. Ritter Lumber Company, Huntington, W. Va., which purchased a large tract of timberland in eastern Kentucky some time ago, is about ready to purchase equipment for a sawmill which is to be erected on the property. C. L. Ritter is president of the company.

The Princeton Water Company, Princeton, Ind., is considering the installation of additional equipment for the purpose of providing greater pressure for fire purposes.

The Carter Coal Company has been organized at Bristol, Tenn., with \$10,000,000 capital stock to develop coal mines in Kentucky, Tennessee and Virginia. A lot of going properties will be taken over and greatly improved, and the machinery requirements of the company will be large. George L. Carter is president; J. C. Stone, vice-president, and T. F. Davis, secretary and treasurer.

The Smith Drill & Machinery Company, Chattanooga, Tenn., has been incorporated with \$50,000 capital stock by G. W. Smith, D. F. Beckham and others.

The Halls Service & Machinery Company, Halls, Tenn., is asking for prices on machine tools, electrical supplies, etc.

The Rock City Tin & Copper Works, Nashville, Tenn., has been organized with \$3,000 capital stock by Harry Dreebin, Frank Sodler and others.

The McGee-Ross Hardware Company, Jackson, Tenn., is in the market for freight elevators.

H. D. Leneave, Franklin, Tenn., has acquired timberlands in that section and will erect a large sawmill on the property.

E. Smith, Kosciusko, Miss., is in the market for a second-hand 18-in. lathe.

Birmingham

BIRMINGHAM, ALA., January 13, 1913.

The head of the machinery department of the leading hardware house in Birmingham said: "The new year has opened up well with a good demand for all classes of machinery. Pumps, engines and boilers are alike going in good volume. Sawmills and mines are active and are persistent buyers, especially of boilers. The sawmills are the largest takers of boilers. The year 1912 was a good one in the machinery trade and it has been good thus far in 1913. Orders continue to come from the contractors on the double-tracking right-of-way of the Louisville & Nashville between here and Nashville."

The Chilton County Ore Company has been chartered by John N. Coffin, M. C. Ryding, L. T. Beecher, Ramsey & McCormack and H. W. Coffin, all of Birmingham, for the purpose of mining ore in Chilton County. The capital stock is \$150,000, and the incorporators men of large means.

The foundations of the pipe plant of the Lynchburg Pipe & Foundry Company are being laid at Anniston. It will soon be ready for the superstructure.

The Gadsden Pipe & Fitting Company, whose soil pipe plant at Gadsden was burned, will rebuild in the near future. The fire loss is \$15,000.

The Birmingham Metal Products Company, Birmingham, Ala., contemplates establishing a branch plant at Spartanburg or Greenville, S. C.

The International Mining Company, Birmingham, Ala., has been chartered with an authorized capital stock of \$100,000. J. W. Eastman, J. R. Rothwell and Albert H. Maloney are interested.

Madison, Fla., has voted \$5,000 for a waterworks system.

The Alabama Interstate Power Company, Birmingham, Ala., announces plans for building a dam at Lock 18 on the Coosa River similar to the one now being built at Ocampo on the same river, at a cost of \$5,000,000, for generation of water power. Plans depend somewhat on a Government permit.

The city of Rome, Ga., has engaged the Solomon-Norcross Company, Atlanta, to estimate on the cost of an electric lighting plant. Bonds to the amount of \$40,000 have been voted.

Jonesboro, Ga., will vote on January 21 on a \$10,000 bond issue for an electric lighting plant.

The Anniston Lumber Mfg. Company, Anniston, Ala., has been chartered with a capital stock of \$5,000 by Alonzo Dishman and others.

Hull & Devane have purchased the ice plant of Alexander Perry at Fort Meade, Fla., and contemplate enlarging it.

E. E. Saunders & Co. will build a plant at Pensacola, Fla., to manufacture glue and fertilizer from fish.

Louis Melbovitz of Springfield, Mo., may establish plant at Birmingham, Ala., for the manufacture of a device to prevent rails from spreading.

The Board of Aldermen of Raleigh, N. C., have begun action looking to acquiring municipal water plant by buying or building.

T. A. Cumbie contemplates establishing a barrel stove factory at Bellwood, Ala.

The O. H. Kyle Veneer Company, Mobile, Ala., has been chartered with a capital stock of \$10,000 to succeed O. H. Kyle & Co. It will manufacture hardwood veneering. O. H. Kyle, A. L. Kridler, N. G. Harding of Chicago, and others interested.

The Creston Cooperage Company, Greenville, Miss., has been chartered with a capital stock of \$750,000. Incorporators: John M. Peel, William S. Peel and George M. Whitney, all of Marysville, Ohio.

The Alabama Automatic Threading Shuttle Mfg. Company, Gadsden, Ala., will establish plant to manufacture shuttles. W. H. Portner, president, and others interested.

Texas

AUSTIN, TEXAS, January 11, 1913.

Activity continues in electrical development of various kinds all over Texas and in Arizona and New Mexico. Several new enterprises of this character are also reported from Mexico. An era of electric power utilization is being inaugurated. It is expected that the demand for electrical machinery will show a continual increase during the year. Besides the lines of interurban electric railroads that are now under construction plans are on foot for several additional lines, with good prospects of their construction being started in the next few months. The demand for irrigation pumping plants is larger than it was at this time last year, and dealers anticipate a record-breaking trade in this class of equipment.

The Texas Light & Power Company, which recently purchased the electric light and waterworks plants at Eagle Pass, will enlarge the electric power station there and construct a transmission line to the Indio ranch, 45 miles, where power will be used to operate pumps for irrigating 6000 acres of land. The company is also making plans to build other power transmission lines for the purpose of operating irrigation pumping plants and to furnish light and power for the towns of Cometa and Carrizo Springs.

L. M. Hewett and associates are promoting the establishment at Bryan of a brick manufacturing plant which will have a capacity of 100,000 bricks per day. Test have been made of a large clay deposit and the results were satisfactory.

F. A. Price of Taylor is arranging to build a gas manufacturing plant and lay a distributing system at Ennis.

Clayton Rogers, who recently obtained control of the Malone Water Company of Malone, will install a modern pumping plant and other equipment for the purpose of supplying that town with water.

The City Council of Beaumont will receive bids February 4 for abattoir machinery and equipment necessary to the complete operation of a municipal abattoir.

W. O. Connor, Dallas, is building a sheet iron shop at 1817 Coombs street.

The International & Great Northern Railway is having plans prepared by its engineering department for a roundhouse and machine shop at San Antonio, the cost of which is estimated at \$35,000.

The City Council has under consideration the proposition of issuing \$40,000 of bonds for installing a water filtration plant at Denison.

The Copper Reef Mining Company will install a new electric power station at Globe, Ariz., and build a transmission line from San Carlos to its mine, a distance of about 12 miles. The company will also install an aerial tramway upon its property.

The land owners of the Queen Creek District near Mesa, Ariz., have organized an irrigation district and will construct a system of irrigation, including the installation of several pumping plants, each of which will be capable of irrigating about 600 acres of land.

The Thatcher Water Company will install a waterworks plant and lay a distributing system at Thatcher, Ariz.

William A. Talcott and Nathan Kendall will install an irrigation pumping plant on a tract of land near Tucson, Ariz.

The city engineer is preparing plans for extending and improving the waterworks system and plant of Tucson. Larger mains will be laid and a water storage reservoir constructed.

The Home Plot Company will install 100 electric pumping plants on a tract of 2000 acres of land near Deming, N. M. Each plant will be capable of irrigating 20 acres.

Gaston Schwob, Hermosillo, Mexico, has obtained a concession from the Federal Government of Mexico for the establishment of a large meat-packing plant at Sufragio, State of Sinaloa.

Jesus Almada has begun the construction of what will be the largest irrigation system in Mexico, it is said. He will build a dam across the Sinaloa River near Navolata, State of Sinaloa, and will construct a main canal about 100 miles long.

The Pacific Coast

PORTLAND, ORE., January 7, 1913.

Machine tool sales since the holidays have been of little consequence, but a fair amount of inquiry is noted in a small way, and somewhat more activity is expected by the end of the month. All lines of work are now more or less hampered by weather conditions, which have interfered, especially with logging operations, though efforts are being made to avoid curtailment as much as possible. Prospects of increasing business are attracting more competition in machine tools and several other lines, and stocks of all classes of machinery will be materially increased before spring.

The lumber situation is more encouraging than ever. Some very heavy orders for eastern shipment have been taken, and the year opens with large foreign inquiries, with prospects of increased coastwise business. During the closed period mills are putting in a great deal of new equipment, and this movement is expected to increase with the approach of spring. Agricultural conditions in the north coast states also appear favorable, and preparations are under way for the installation of much fruit and grain handling equipment.

The Eccles & Smith Company, San Francisco, Cal., which has long maintained an office in Portland for the sale of railway equipment, is enlarging its field, and will shortly have ready for inspection at 68 First street a complete stock of machine tools. F. A. Daley, who has had long experience in the machinery business of this vicinity, has charge of the new department.

F. B. Mallory & Co., large handlers of logging equipment, have incorporated with a capital stock of \$200,000, with Frederick B. Mallory as president. The company started business five years ago, and maintains a store at Second and Pine streets, a warehouse at Thirteenth and Hoyt streets and a factory at Vancouver, Wash.

W. A. and H. J. Vaughan and J. McDonald have organized a new company to take over the A. B. Daly Logging Machinery Company, North Bend, Ore.

The Northern Pacific Railroad is preparing to build a large addition to its car shops at Tacoma, Wash.

It is reported that C. C. Wolford of Wolford & Wolford, Seattle, Wash., will establish a large automobile repair shop in this city.

The Northwestern Electric Company has purchased a site near this city for a large steam-electric generating plant, plans for which are now being prepared.

It is reported that the Pacific Power & Light Company will begin work shortly on its power development at Hood River, Ore., where a 7000-hp. plant will be installed.

Two new boilers and an engine will shortly be installed in the Hammond Lumber Company's mill at Albany, Ore.

A number of hydraulic mining properties near Grant's Pass, Ore., have been consolidated, and arrangements are being made for a hydro-electric power plant and several new hydraulic mining outfits.

Orders are reported placed at Spokane, Wash., by the Granby Smelting Company for a large amount of mining and smelting machinery.

The Asphaltum Products Company, Georgetown, Wash., is preparing to enlarge its plant.

The Seattle Can Company, C. M. Bogle, president, has purchased a site at Seattle, Wash., with the intention of building a new plant.

It is reported that the American Can Company will soon open a branch factory at Vancouver, B. C.

The McCleary Timber Company, operating near Aberdeen, Wash., is preparing to install a new shingle mill.

The Canyon Lumber Company, Everett, Wash., will put in a new gang saw next month.

St. Louis

St. Louis, Mo., January 13, 1913.

In the machine tool market the past week has shown a continuance of the quietude recently noted. Very few inquiries are coming in and those which are received are for single tools and small orders generally. Aside, however, from the quiet in this respect the dealers see no other signs of a disturbing character. Collections are reported good.

The Werthan Bag & Burlap Company, St. Louis, has been incorporated with \$75,000 capital stock by Morris Werthan, M. M. Werthan and B. Duddy, and will enlarge and improve a plant now operated by them at 325 and 327 North Main street, St. Louis.

The Mayor and Board of Public Improvements of the city of St. Louis are planning for the construction of new quarters for the St. Louis Industrial School, and it is likely that arrangements will be made for some equipment to be installed in order to aid in providing the inmates with a trade.

The Brookings Timber & Lumber Company of St. Louis has been incorporated by Robert S. Brookings, Joseph W. Lewis, Walter D. Condie, L. E. Winston and Harold Pettus to develop Oregon timber lands and install sawmill and other equipment.

The Liquid Dispenser Mfg. Company, St. Louis, has been incorporated with these stockholders: John A. Hurster, W. D. McClain and Taylor B. Young to equip a plant for the manufacture of receptacles for the dispensing of liquids.

The Lawton Mining Company, Webb City, Mo., with \$10,000 capital stock, has been incorporated by C. C. Yoder, James Hopper, T. W. Hill and others to equip and develop mining property controlled by them.

The Nall-Kirkpatrick Mfg. Company, Kansas City, Mo., has been incorporated with \$50,000 capital stock by J. B. Nall, J. S. Kirkpatrick and J. W. Sleight. Its plans are not announced.

The Monarch Electric Company, Kansas City, Mo., has increased its capital stock from \$75,000 to \$125,000 for the purpose of extending its operations.

The Wheatley Spoke Company, Little Rock, Ark., with \$10,000 capital stock, has been incorporated by Thomas A. Wheatley, P. W. A. MacMahon, C. W. Shringer and George T. Weis to equip a plant for the manufacture of spokes.

The McCraney Coal Mining Company, Viola, Ill., has increased its capital from \$10,000 to \$25,000, changed its name to the McCraney Sand & Gravel Company and removed its offices to Milan, Ill. It is reported as having plans for the installation of a gravel and sand recovering plant.

The Leconte Mfg. Company, Gilman, Ill., with \$10,000 capital stock, has been incorporated by F. E. Leconte, Lewis Hitchcock, David A. Williams, Edward Hitchcock and George A. Critton.

The Griesedieck Bros. Brewery Company, which has been remodeling the Consumers' plant in St. Louis, has increased its capital stock from \$150,000 to \$250,000 for the purpose of further increasing the brewery's capacity.

The Pronto Mfg. Company, St. Louis, with \$50,000 capital stock, has been incorporated by Owen McCaughy, John M. Kreider, Hector McRee and others, to equip a plant for the manufacture of a specialty.

The Dever Realty Company, Lake Charles, La., J. L. Dever, president, will install a pumping plant to drain land and also irrigation works, all to cost about \$50,000.

The mill equipment of J. F. McIntyre & Sons, at Pine Bluff, Ark., is to be increased by the installation of considerable new machinery.

The Bayou Rapides Lumber Company, Alexandria, La., of which J. G. Gingras is president, has plans for a mill with 60,000-ft. daily capacity.

The Southwest Silo Company, Oklahoma City, Okla., capital stock \$25,000, with H. B. Garrett as general manager, has plans for a plant for the manufacture of steel silos, capacity 60 per month.

The Jonesboro Peanut Hulling & Mfg. Company, Jonesboro, Ark., capital stock \$20,000, has plans for the increasing of its mechanical equipment.

Brick manufacturing machinery is to be installed in conjunction with the plant of the Leaf River Gravel

Company, Hattiesburg, Miss., recently bought by I. V. Austin and others.

Electric light and water works plants are to be equipped at Camden, Ark., by the trustees of the Myar estate, J. Watta, J. T. Gaughan and H. Solmsion.

The Pacific Electric Company, of which W. M. Thomas is engineer, has obtained a franchise for the construction of a public service plant at Pacific, Mo.

An electric light and power system is to be constructed at Rich Hill, Mo., by the city, with Rollins & Westover of Kansas City, Mo., engineers in charge.

Additions to the plant and transmission system of the light and water plant at Collinsville, Okla., are to be made by the city. W. B. Erwin is mayor.

The city of Stonewall, Okla., has voted a bond issue for the construction of an electric light and power plant and the money is available for the work at once.

The New Orleans Railway & Light Company, New Orleans, La., has plans for the construction and equipment of car building and repair shops of considerable size.

Additional equipment is to be installed in the plant of the Watkins Foundry & Machine Company, at Hattiesburg, Miss., recently bought by W. E. Morris of Gulfport, Miss., who is also interested in the Dantzler Machine & Foundry Company, Gulfport.

The American Shoe Machinery & Tool Company, St. Louis, has awarded a contract for the construction and equipment of a plant for the manufacture of mechanical devices, etc.

The Cushing Oil Development Company, Cushing, Okla., has been incorporated with \$50,000 capital stock by H. W. Steer, J. C. Kerr and G. W. Schlege of Chandler, Okla., to equip and develop oil lands controlled by them.

The Phoenix Refining Company, J. K. Duffy, Tulsa, Okla., president, has contracted for the construction and equipment of an oil refinery of 2000 barrels daily capacity at Sand Springs, Okla.

The town of Cabot, Ark., is considering the construction of an electric light plant and also water works. W. M. Hudson is especially interested.

Tripoli deposits at Peoria, Okla., it is reported, are to be developed by the Oklahoma Tripoli Company, of which J. H. Smith of 302 Broadway, New York City, is treasurer and general manager. The company will build a large plant and power house with a 100-ton daily capacity.

A packing plant to cost \$125,000, planned by William Cargill of Fort Worth, Tex., is to be built at Pine Bluff, Ark., by the Arkansas Packing Company, of which P. P. Byrd is president.

A pumping station is to be built by the directors of the Fourche Drainage District at Little Rock, Ark., Warren E. Lenon, secretary. The equipment required includes four 25,000-gal. pumps, four 75,000-gal. pumps, eight motors, two 125-hp. Corliss engines, two 350-hp. Corliss engines, condensers, etc., and other equipment.

The New Orleans Can Company, with \$100,000 capital stock, has been incorporated by Albert S. White, E. A. Fordstran, Adolph J. Munch and Arsene Petrilat to equip a plant for the manufacture of cans.

The city of Broken Bow, Neb., will receive bids until January 21 for furnishing a 60-hp. oil engine. A. J. Van Antwerp, engineer, can be addressed.

Eastern Canada

TORONTO, ONT., January 11, 1913.

The year begins with fine prospects for the Canadian manufacturers of plant and machinery. There is good reason to expect that the high record trade of 1912 will be passed in 1913. The country has no spare manufacturing capacity. Its population increased in 1912 by about 400,000 souls from immigration alone, and the newcomers are in a larger degree than ever people of substance. Most of them have money when they enter the country, many of them quite large capital resources, and all have work awaiting them. As the producers of Canada as a whole are doing well, the demand continually tends to outrun the supply and thus stimulates existing manufacturers to expand their plants and nurse new projects into being. It seems hardly possible to be too optimistic about Canada. Building enterprise now offers an enormous demand for articles manufactured by makers of equipment, for in no country in the world is the rate of building higher than in Canada. The cities of the future are being rapidly placed on their foundations now.

The weather has been partly favorable and partly unfavorable for trade of late, but in balance it has been

good for trade. In no former season was the water movement of grain to market kept up so long on a large scale. Icebreakers are keeping the harbors open at the head of the lakes and vessels are expected to be able to load up to January 20. The very great success of the transportation companies in handling the grain crop has been highly conducive to trade activity.

On municipal polling day the ratepayers of Toronto approved money by laws providing for capital expenditures on new works amounting to \$13,000,000. The works are as follows: Viaduct, to cost \$2,500,000; water works extension, to cost \$6,677,000; storm sewer, to cost \$954,000; filtration plant addition, to cost \$1,375,000; garbage disposal plant, to cost \$1,000,000.

The government of Quebec Province is building a large dam on the Upper St. Maurice River to cost \$1,250,000.

The main building of the Nova Scotia Carriage and Motor Car Company, at Amherst, N. S., and the power house and dry kiln have been completed. It is 60 x 340 ft., four stories. Sleighs, carriages, motor cars and trucks will be manufactured. The motor car department is being transferred from Kentville, N. S., and the carriage and sleigh branches will be moved to Amherst in the spring.

A large addition is to be made to the Government elevator at Montreal. The contract has been let to the James S. Metcalf Company, of that city, for \$600,000.

The Canadian H. W. Johns-Manville Company, Toronto, will open a branch in Calgary in the near future.

The Ralph Clark Company, Toronto, will erect an additional factory building to cost \$160,000.

Fire destroyed the roofing mill of the Standard Paint Company at Montreal. The damage is said to amount to about \$100,000.

The James McLaren Company, Buckingham, Que., is to make an extension to its pulp mill. The new building will be 80 x 180 ft. and machinery will be installed.

It is considered probable that the Canadian Pacific Railway Company will remove the Dominion Atlantic divisional headquarters and car shops from Kentville, N. S., to Middleton, N. S.

The Dennis Wire & Iron Works Company, London, Ont., will build a structural steel plant, to cost \$25,000, in connection with its works.

The Magog Foundry Company, Magog, Que., proposes to erect another foundry next summer.

A plant for the manufacture of automatic engine indicators is being projected at Sarnia, Ont., by George Brown, of that place.

The Canada Steel Goods Company, Hamilton, Ont., will make an addition to its factory to cost \$40,000.

The Gildey Boat Company, Penetang, Ont., is putting up a factory.

The Niagara, St. Catharines & Toronto Railway Company will extend its transformer station at St. Catharines at a cost of \$40,000.

Paul Demers' sash and door factory, Montreal, has been destroyed by fire with a loss of \$50,000.

The Federal Engineering Company, Ltd., Toronto, has been incorporated with a capital stock of \$500,000 to carry on business as manufacturer and dealer in electrical machinery, appliances, plants, etc.

Quebec Structural, Ltd., Quebec, has been incorporated with a capital stock of \$250,000 to carry on the business of bridge building in all its branches. The incorporators are L. H. Gaudry, Arthur Picard and C. E. Teschereau, all of Quebec.

The Mount Royal Brick Company, Ltd., Montreal, has been incorporated with a capital stock of \$1,500,000 to carry on business as brick and terra cotta manufacturer, etc. The incorporators are W. K. McKeown, E. A. Barnard and J. R. Law, of Montreal.

R. F. Green, Ltd., Toronto, has been incorporated with a capital stock of \$40,000 to manufacture and deal in metal weatherstrip and builders' supplies.

The League of Canadian Automobilists, Ltd., Bridgeburg, Ont., has been incorporated with a capital stock of \$5,000,000 to manufacture and deal in automobiles, motor vehicles and supplies, machinery, implements, etc. James S. Lovell, William Bain, Robert Gowans, Joseph Ellis and Goodman Crowell of Toronto are the incorporators.

A factory for the manufacture of metal window frames is to be erected at King and Dufferin streets, Toronto, by the A. B. Ormsby Company at an estimated cost of \$150,000.

The Gurney Foundry Company, Toronto, will soon build an addition to its plant, estimated to cost \$40,000.

A factory building to cost about \$50,000 is to be built at Sterling road and Dundas street, Toronto, by

the Cowan Company, Ltd., manufacturer of chocolate, cocoa, etc.

A machine shop with modern equipment is to be added to the plant of the Ottawa Car Company, Ltd., at Ottawa, Ont.

The Window Glass Machinery Company, Cayuga, Ont., owned by Pilkington Brothers, St. Helens, England, is planning to erect a branch factory at Thorold, Ont.

Plans have been prepared for a two-story fireproof addition to the factory of the Canada Steel Goods Company, Hamilton, Ont., which has recently been reorganized with an increase of its capital stock to \$300,000.

Western Canada

WINNIPEG, MAN., January 10, 1913.

The volume of business for last year was substantially greater than for the preceding year. Business at the moment is seasonably quiet, and many of the local houses are taking stock. The general situation in western Canada appears to be very healthy, and it is confidently expected that the spring will be very active in the machinery line. As the country grows manufacturing industries develop, and quite a number of new plants of various kinds are under plan for the first part of this year.

The citizens of Le Pas, Man., have voted favorably on a by-law to provide \$120,000 for the construction of a waterworks plant.

The Dominion Tar & Chemical Company, Ltd., which has manufacturing plants at Sydney, Nova Scotia, and Strathcona, Man., contemplates establishing another plant at Vancouver, B. C. The head office is in London, England.

The Canadian Gas Generator Co., Ltd., Winnipeg, has been incorporated to manufacture gas generators and produce heat, light and power. Frank O. Larsen is the manager.

The Cedar Cove Sash & Door Company, Ltd., False Creek, B. C., is preparing to build a new sawmill. Another sash and door plant will also be added.

The Abbotsford Timber & Trading Company, Ltd., Abbotsford, B. C., is planning to install several new machines in the lumber and planing mill at that point.

The Ross & Lapp Lumber Company, Ltd., Mount Lehman, B. C., will install a new engine, which will materially increase the output of the plant.

The Canadian Southern Lumber Company, Ltd., Sidney, B. C., has closed down for the purpose of installing new machinery.

J. Nelson, Kamloops, B. C., is planning to build a sawmill at that place.

Albert Dollenmayer, Fort George, B. C., will improve the machinery of his lumber mill this winter.

It is announced that the Terminal Lumber & Shingle Company, Ltd., Vancouver, B. C., will build another large lumber mill next summer. T. F. Patterson, Vancouver, is the president of the company.

The Board of Control, Winnipeg, will receive bids until January 24 for furnishing three 2700-kw. transformers.

The Coquitlam Shipbuilding Company's plant on the Pitt River, B. C., is about ready for operation, and the company's sawmill is having the machinery put in place.

The Ellison Milling Company, Lethbridge, Alberta, offers to double the capacity of its plant to one of 600 barrels per day if the city will agree to furnish power at \$15 per hp.

The Mount McKay Brick & Tile Company, Ltd., started operations recently at Fort William, Ont., with a working capacity of 20,000 bricks per day. This amount will, however, be largely supplemented in the spring when extra machinery will be installed to increase the daily production to 100,000 per day.

A factory is planned for the Saskatoon Trussed Wall & Building Company at Saskatoon, Sask.

The Lethbridge Brewing Company, Lethbridge, Alberta, has given the contract for the erection of a brewery there.

Government Purchases

WASHINGTON, D. C., January 13, 1913.

The Paymaster General, Navy Department, Washington, will open bids January 21, under schedule 5081, for one screw driving and boring machine combined, one 5-opening chair back bending machine, one 2-drum oscillating sanding machine, one 5-spindle boring machine

and one hand bending machine, all for delivery to Portsmouth.

The Department of the Interior, Washington, will open bids January 27 for furnishing and delivering one locomotive at the Government Hospital for the Insane, Washington.

The Bureau of Supplies and Accounts, Washington, opened bids January 7, as follows:

Schedule 5054, class 11, for one motor-driven universal milling machine with vertical spindle milling attachments for delivery to Mare Island—Bidder 6, Brown & Sharpe Mfg. Company, Providence, R. I., \$2,845.75 and \$2,271.40; 24, Holt Electric Company, Milwaukee, Wis., \$211.25, part; 33, Kempsmith Mfg. Company, Milwaukee, Wis., \$2,105; 38, Manning, Maxwell & Moore, New York, \$2,426; 44, Niles-Rement-Pond Company, \$2,424.84; 87, Harron, Rickard & McCone, San Francisco, Cal., \$2,450; 88, Eccles & Smith Company, San Francisco, Cal., \$2,282.

Trade Publications

Brass Gate Valves.—Chapman Valve Mfg. Company, Indian Orchard, Mass. Folder. Describes and gives prices of a brass gate valve of wedge pattern with non-rising stem which can be repacked when open under pressure. The valve is designed List 1.

Condenser Cleaners.—Lagonda Mfg. Company, Springfield, Ohio. Bulletin 0-1, entitled "Scale Removal from Condensers." Aside from describing and illustrating the Lagonda devices for cleaning condensers and evaporators, it contains a discussion showing the harmful effects of scale in condensers, how it decreases vacuum and increases the power of the auxiliaries. Curves are included showing the increased steam consumption resulting from the accumulation of scale in surface condensers. Also includes matter pertaining to water strainers and other specialties.

Air Compressors.—Chicago Pneumatic Tool Company, Fisher Building, Chicago, Ill. Bulletin No. 34F, 27 pages. Devoted to a mechanical description of the design and construction of class G Chicago pneumatic compressors, belt, steam or motor driven, of the company's manufacture. Special attention is directed to interchangeability of parts, quality of materials used and workmanship.

Ball Bearings.—Pressed Steel Mfg. Company, 504 Land Title Building, Philadelphia, Pa. Booklet. Descriptive of ball bearings for light and medium weight, including bearings with radial and thrust bearing combined, for thrust work only, etc. Illustrates many adaptations of the bearings, such as their use in casters, swivels, with upright and horizontal shafts and in wheels.

General Pipe, Bending & Erecting Company

The General Pipe, Bending & Erecting Company has been incorporated under the laws of Pennsylvania by James W. Prenter, W. L. James and Walter McMinn, formerly connected with the Best Mfg. Company. Its plant is located at 3020-3026 Liberty street, Pittsburgh, Pa., and is well equipped for the manufacture and fabrication of piping materials of every description, including pipe bends, welded headers, Van Stone joints, valves, fittings and flanges. As piping engineer and contractor the company is prepared to furnish and install complete high and low pressure piping systems for every purpose.

The president and sales manager is James W. Prenter, who has been connected with the sales department of the Best Company for a number of years. W. L. James has been erecting engineer for the same company for the past ten years. Walter McMinn was formerly shop superintendent of the Pittsburgh Piping Equipment Company and was connected with that company for six years, previous to the past year, during which time he was connected with the Best Company. President Prenter reports quite a volume of business since beginning operations, and feels confident of larger trade in the near future.

The George M. Newhall Engineering Company, Morris Building, Philadelphia, Pa., has been appointed district sales agent for that city and vicinity on Nova high speed steel and Intra tool steel, marketed by Hermann Boker & Co., New York. A complete stock of all sizes of Nova high speed drills, tool bits, Intra hack saws, Boker warranted cast steel, pneumatic chisel blanks, etc., will be carried at the company's warehouse, 24 North Seventh street.

The Duluth, Missabe & Northern Railroad has bought 1000 steel ore cars in the past week, and a similar order has been placed by the Duluth & Iron Range Railroad. For the Bessemer & Lake Erie and the Newburg & South Shore railroads the Steel Corporation is yet to buy 2250 cars.

